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PROXIMATE ANALYSIS OF THE BARK OF PISCIDIA ERYTHRINA.

By Herman Berberich, P.D.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy. No. 178.

Piscidia erythrina, or Jamaica dogwood, belongs to the natural order Leguminosæ, and is a native of the West India Islands.

A fluid extract of the bark was several years ago introduced to the notice of the medical profession, and it is stated by physicians to be a direct sedative, producing narcotic effects, which are refreshing, and not followed, as in the case of opium, by hyperæmia of the brain, nausea and general nervous disturbance. It is said to be also of value in bronchitis, asthma, spasms of the muscles, due to functional causes, chorea, tetanus, and especially in toothache, to relieve pain.

By treating the fluid extract of the bark with slaked lime, Edward Hart[1] obtained a crystalline substance which he considered to be the active principle of the bark. The crystals separated on the sides and bottom of the flask after the mixture had stood for two or three days. They were accompanied by a resinous substance. The crystals were purified by recrystallization from alcohol, and were finally obtained in a nearly colorless condition. After repeated recrystallization from alcohol, the substance was obtained in the form of small, yellowish crystals, which, under the microscope, appeared to consist of four- or six-sided prisms. The same investi-

[1] *Amer. Chem. Jour.*, 1883, p. 39; *Therapeutic Gazette*, 1883, pp. 97, 98.

gator further described the crystals as "insoluble in water; slightly soluble in cold, much more in boiling alcohol; only slightly soluble in ether; easily soluble in benzene and chloroform. It is dissolved by strong hydrochloric acid and sulphuric acid, but reprecipitated apparently unchanged by dilution with water. Fehling's solution failed to detect glucose or sucrose. The alcoholic solution is neutral to litmus paper. Alcoholic lead acetate solution does not produce a precipitate." The crystals melted at 192° C. An elementary analysis of them led to the formula, $C_{29}H_{24}O_8$. They were named *piscidia.*

The work of the present writer consists of a proximate analysis of the bark and a special search for the principle called *piscidia.* The proximate analysis was conducted according to the scheme of Dragendorff. The material was used in No. 40 powder. The percentages stated are for the air-dry bark.

	Per cent.
Petroleum ether extract:	
Caoutchouc, saponifiable wax and fat, etc.	0·61
Ether extract:	
Glucose, saccharose, resin, *piscidia*, etc.	0·86
Absolute alcohol extract:	
Glucose, saccharose, resin, etc.	0·51
Water extract.	
Mucilaginous and albuminous substances, 14·78 per cent.; dextrin, 3·38 per cent.; saccharose, 1·20 per cent., etc.	22·43
Alkaline-water (2 per cent. NaOH solution) extract:	
Mucilaginous and albuminous substances, 1·28 per cent., etc.	4·40
Acidulated water (1 per cent. HCl solution) extract:	
Pararabin, 1·35 per cent.	4·00
Starch	1·34
Moisture	9·25
Ash:	
Potassium, sodium, calcium, magnesium, chlorine and phosphoric oxide	10·55
Cellulose and undetermined substances	46·05
Total	100·00

Tannin was not found. The acidulated water extract contained calcium phosphate but not calcium oxalate.

After completing the proximate analysis a special search was made for the principle *piscidia.* The method used by Hart was followed. For this purpose a fluid extract was made by exhaust-

ing 500 grammes of the bark with an alcohol of 78 per cent. strength. The extract was concentrated by distilling off the alcohol until about 100 c.c. of liquid remained in the flask. This liquid was poured into a beaker containing 30 grammes of quicklime, which had been previously slaked with enough water to make a thick paste. The milk of lime and concentrated extract were intimately mixed, the mixture allowed to stand in a warm place for a half hour, then strained, and the residue pressed. The liquid was then filtered through paper to obtain it in a clear condition. Water was now added to the clear filtrate until the latter was rendered slightly turbid. The liquid was then set aside for crystallization to take place. After two or three days crystals separated upon the sides and bottom of the beaker. They were accompanied by a resinous substance, from which they were purified by recrystallization from alcohol. By adding water to the mother-liquor from these crystals, a second crop, still more impure, was obtained. These crystals possessed all of the properties assigned to *piscidia* by Hart.

COTTON ROOT BARK.

By Frank William Morgan, P.D.

Cotton root bark was first introduced to the attention of the medical profession by Dr. Bouchelle, of Mississippi, who, in an article in the *Western Journal of Medicine and Surgery*, August, 1840, stated it to be, in his opinion, an excellent emmenagogue, and not inferior to ergot in promoting uterine contraction. He stated that it is habitually resorted to by the slaves of the South for producing abortion, and thinks it acts in this way without injury to the general health. To assist labor he used a decoction (4 ounces to a pint) the dose of which was a wineglassful.

In the *Nashville Journal of Medicine and Surgery*, July, 1855, Dr. J. T. Shaw stated that he esteemed it as superior to any other emmenagogue, and equal to ergot as a parturient, while attended with less danger. He used a tincture made by macerating 8 ounces of the dried bark in 2 pounds of diluted alcohol for two weeks. Of this he used a drachm three or four times daily.

Mr. Weatherby (Amer. Jour. Pharm., May, 1861) denies the statement that this bark is used as an abortificant by the slaves of the South. He states that for about a year he was in one of the finest cotton-growing districts of the South, and that he asked some

twenty physicians, and also the overseers of some large plantations, as to their having heard of this use, but found nothing to corroborate the statement.

The bark was examined chemically by Professor Wayne (AMER. JOUR. PHARM., 1872, p. 289), W. C. Stahle (*Ibid.*, 1875, p. 457) and C. P. Drueding (*Ibid.*, 1877, p. 386).

Both Wayne and Stahle confined themselves principally to the investigation of the resin. Wayne found a yellow resin, turning red on exposure, which he considered insoluble in chloroform, ether, benzol and aqua ammonia, but found it soluble in alcohol. Stahle obtained a resin under several different conditions which was invariably of a red color, and the solubility he found to be as follows: In alcohol, 14 parts; in ether, 25 parts; in chloroform, 15 parts; in benzol, 122 parts. The difference in the color of the resin found by the two investigators appears to be due to the fact that Professor Wayne used fresh bark, while Mr. Stahle used a dried product. It is well known that the fresh bark contains a substance which is yellow, and which, on exposure to light and air, becomes red.

Mr. Drueding found the constituents of the bark to be: Of inorganic substances K, Na, Ca, Mn, Fe, H_2SO_4 and H_3PO_4; of organic: red and yellow resin, resinous coloring matter, fixed oil, gum, sugar, tannin and chlorophyl. About 1 ounce of fixed oil was obtained from 5 pounds of root.

The material used in this investigation was fresh and gathered during the winter months. The dried bark is from 2 to 4 lines in thickness (when fresh from 2 to 4 mm.), with very thin cork, which is easily removable. The color, when fresh, is yellow, and, after exposure to the air and light, changes to a reddish-brown. The outer surface is reticulately wrinkled, possesses numerous small, round, black dots of a fungus or lichen; occasionally round scars and transverse warts appear which are fissured in the middle along their whole length (being lenticels). The inner surface is yellowish-white, reticulate and shining, the bast being easily separable from the rest of the bark in thin, transparent, porous, reticulately-marked plates. After peeling off the bast the inner bark is whiter in appearance and contains numerous small, round dots.

The bark (*Figs. 1* and *2*) consists of from 8 to 12 layers of tabular, tangentially-elongated cork cells (*c*), generally very much

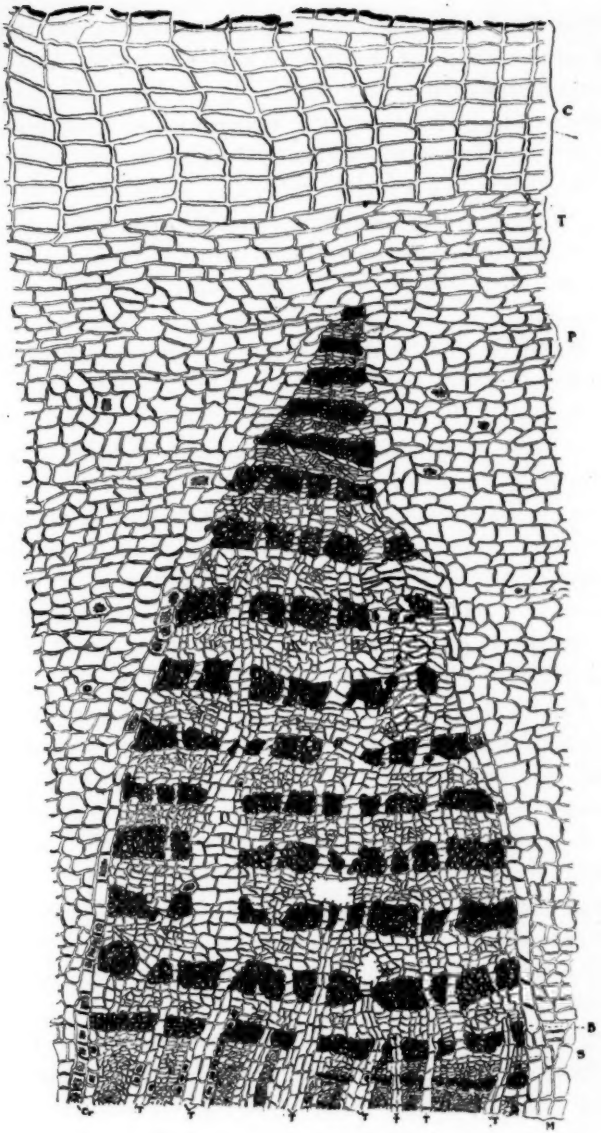

FIG. 1.—Transverse section of Cotton Root Bark. (*c*) cork; (*cr*) crystals of calcium oxalate; (*b*) bast; (*m*) medullary rays; (*T*) cells containing tannin; (*s*) sieve. (About 180 diameters.)

broken and eroded on the outer surface, and containing in the outer layer tannin and coloring matter. Underneath this corky layer lies a parenchymatous tissue (*p*) consisting of a number of layers of thin-walled cells. Into this latter extends a wedge-shaped mass of bast fibres (*b*). The latter is arranged in layers, separated from one another by layers of parenchyma (*p*) and sieve cells (*s*), the lower layers being very much broken by short medullary rays (*m*). There also occur secretion reservoirs (*s*), and cells containing starch, tannin and oxalate of calcium crystals. The latter are rosette-shaped and relatively numerous in the inner bark. Frequently the secretion reservoirs can be seen by the naked eye, especially if the soft material is freshly sectioned.

In making a micro-chemical examination of the bark for tannin, some of it was macerated for two weeks in an aqueous solution of copper acetate (method employed and suggested by Professor Kraemer), which has the effect of precipitating tannin as reddish masses in the cells containing it. On sectioning and examining with a magnification of twenty five diameters, tannin was identified in the outer row of cork cells, but it occurs most abundantly, however, in the first layers of parenchyma just beneath this cork layer. This tannin-containing parenchyma tissue is from one to five cells in width. Tannin also occurs in isolated parenchyma cells throughout the bark, especially lying between the wedge-shaped groups of bast fibres and in the cells lying adjacent to the groups of bast. Of the latter, generally only those cells contain tannin which are arranged on the outer and inner tangential surfaces of the bast bundles. It is also found in the secondary medullary ray cells.

Calcium oxalate crystals are found occurring frequently in the primary medullary rays, and in the cells lying on either side of the cells of the smaller rays; occasionally in the parenchymatous tissue of the outer bark.

Secretion reservoirs (*s*), containing oil and resin, occur frequently in among the parenchymatous tissue lying near the phloem. These are large enough to be distinguished (in fresh bark) by the naked eye. The reservoirs are apparently of lysigenous origin. The contents were found to be soluble (on maceration); in acetone and alcohol very soluble; in chloroform and dilute alcohol slightly soluble; insoluble in water. The bark, macerated in alcohol and ace-

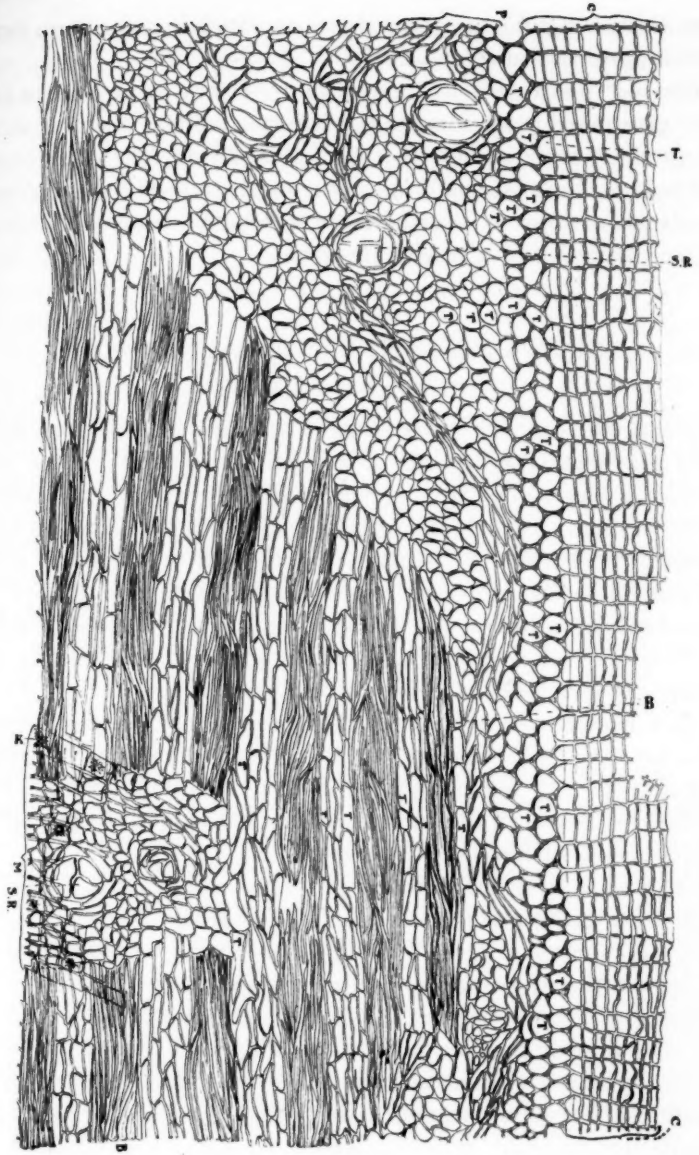

FIG. 2.—Longitudinal section of Cotton Root Bark. (*c*) cork cells; (*p*) parenchyma; (*b*) bast fibres; (*S. R.*) secretion reservoirs; (*m*) medullary rays; (*t*) cells containing tannin; (*cr*) crystals of calcium oxalate.

tone, became lighter in color; that macerated in chloroform developed a purplish-brown color.

The secretion reservoirs in cotton root bark appear not to have been mentioned heretofore, and as it is not unlikely but that it is in the products secreted here that the value of this drug depends, further botanical and especially micro-chemical study on these reservoirs or glands is desired. Furthermore, a detailed study of the origin of these secretion reservoirs is desirable.

NOTE ON TESTING FORMALDEHYDE.

By Lyman F. Kebler.

During the past few years formaldehyde has been forging to the front very rapidly as a preservative and disinfectant. As a disinfectant it has gained much favor with the medical profession, so much so in fact, that the Pharmacopœial Research Committee has deemed it desirable to investigate the relative efficiency of the various methods proposed for estimating the strength of the formaldehyde solutions on the market. This duty was delegated to Prof. Carl E. Smith, whose results appeared in the February number of this Journal of the current year.

As is naturally to be expected when an unusual demand arises for a high-priced commodity, articles of various degrees of strength and purity find their way into commerce. And in devising a method for assay, all the various contaminating and disturbing elements must be taken into consideration.

I had been using the ammonia process proposed by L. Leger,[1] and applied by various workers during the past few years. In every case the ammonia was allowed to react with the formaldehyde over night, and the results always proved satisfactory; 2 c.c. (which is practically 2 grammes) of the formaldehyde were added to 25 c.c. of normal ammonia solution and allowed to stand over night.

Shortly after the appearance of Professor Smith's contribution, I received a sample of formaldehyde, with the request that a report was desired on short notice. Calling to mind the results of the above paper, it was naturally inferred that by making a suitable correction the formaldehyde could be estimated by allowing it to

[1] *Ber. d. deut. Chem. Ges.*, **16**, 1333.

remain in contact with the normal ammonia solution for about fifteen minutes. This was done. The yield with the correction was about 18 per cent., and was accordingly so reported. The solution, however, was tested in the usual way by allowing it to stand over night in contact with the ammonia, and to my surprise the result was not 18 per cent., but 37·5 per cent., or about 100 per cent. above what was reported the day previous. You can imagine my mortification to be compelled to make a subsequent report of 37·5 per cent. on the article that had been reported only the day previous as containing 18 per cent.

This is not the only sample that has behaved in this way, but a series of experiments showed that it was the rule, rather than the exception, that the reaction between the ammonia and the formaldehyde was rather slow. Consequently, it is undesirable, generally, to report results on a reaction of less than six hours' duration. The results of the above experiments varied from 16 per cent. for fifteen minutes to 37·5 for six hours. Neither were the results constant, for duplicates of the same sample. Why this peculiarity, it is difficult to say.

In my opinion, the only reason that Professor Smith arrived at the results that he did, was because the number of samples worked on was too limited. They evidently were not representative of the commercial article.

In conclusion, I wish to place myself on record with those who have found it necessary to allow considerable time for completed reaction between the ammonia and the formaldehyde. And it is not safe to report the per cent. of absolute formaldehyde in a solution, on a reaction continued for less than six hours.

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STANDARDS FOR BLACK AND WHITE MUSTARD SEED.[1]

John Uri Lloyd.[2]

The work was undertaken solely with a view to establish a standard concerning starch in powdered black and white mustard seed. Although starch is not a constituent of ripe mustard seed, it

[1] This investigation was undertaken under the auspices of the Research Committee of the American Pharmaceutical Association.

[2] Read at the Baltimore meeting of the American Pharmaceutical Association.

has been found in commercial powdered mustard[3] and under conditions that preclude the idea of intentional admixture. The presence of starch-bearing weed seeds, and of scattered grains of wheat or of contaminations caused by using second-hand sacks with adhering flour or meal, will account for such reactions. It is therefore desirable that a method should be found that will approximately indicate the proportion of starch.

Black Mustard Seed.—The ordinary method of detecting starch by adding U.S.P. iodine test solution to the aqueous decoction fails with black mustard, on account of the ready absorption of iodine by the oil of mustard that is at once developed when black mustard comes in contact with water. This fact was pointed out[4] by the author in 1895.

If iodine solution is added, and much starch is present, a blue coloration is developed, which remains for a short time only, then fades and disappears. A considerable excess of iodine, however, will effect a more permanent blue coloration, but affords no test concerning the proportion of starch.

If small amounts of starch are present, iodine will show no blue color at all. Hence the necessity of a rapid and convenient method by means of which a permanent starch reaction can be obtained, even when small quantities of starch are present.

Preliminary Work.—The idea of abstracting the disturbing element *sinigrin* by means of solvents prior to the testing for starch was soon abandoned as impracticable and hopeless. Then it was attempted to precipitate the sinigrin by means of the salts of heavy metals, such as silver nitrate, mercurous nitrate, or lead acetate with no satisfaction.

By subsequent and prolonged experiments with copper sulphate, however, it was shown that this substance had the capacity of preventing the formation of oil of mustard, even when employed in as weak a solution as 0·2 per cent. This reaction, however, is not new.[6]

Acting upon this fact, and carrying the principle further, we were enabled to arrive at several useful working methods for starch

[3] *Bulletin of Pharmacy*, Vol. XI, 1897, p. 64.

[4] *Proc. Am. Pharm. Assoc.*, 1895, p. 194–199.

[5] Dr. J. Gadamer, *Ueber die Bestandteile des schwarzen und des weissen Senfsamens. Archiv der Pharmazie*, Vol. 235, 1897, pp. 44–114.

[6] P. Carles, *Pharm. Jour. and Trans.*, 4th series, Vol. VI, 1898, p. 73.

detection in mustard, among which those yielding the most satisfactory results are herein presented.

I. IODINE METHOD.

This method was suggested in our report[4] of 1895. It is easy of execution and rather sharp in reaction. We would suggest for it the following slightly modified directions:

Put into a large test tube 1 gramme of the ground black mustard seed and 10 c.c. of water and 1 c.c. of iodine test solution, U.S.P. Boil until the brown color has disappeared. Cool the liquid and add (by means of a pipette) *1 drop* of iodine test solution, U.S.P., allowing it to flow down the side of the test tube and mix gradually with the upper part of the liquid. If as little as 0·1 per cent. of starch is present, a distinct and quite permanent blue or greenish-blue layer appears in the upper part of the fluid, which, by contrast, is very perceptible.

II. COPPER METHODS.

A. Copper Sulphate and Iodine.

Solutions.—(1) *Copper Sulphate Solution* (0·2 per cent.). Dissolve *1 gramme* of pure crystallized copper sulphate in water to make 500 c.c. of solution.

(2) *Solution of Iodine* (2 per cent.), iodine test solution, U.S.P.

Directions.—Put 1 gramme of the powdered black mustard into a perfectly dry test tube, add 10 c.c. of the (0·2 per cent.) copper solution and boil. No odor of mustard oil will be developed. Cool, and add from 1 to 3 or four drops of iodine test solution, allowing it to flow down the side of the test tube, taking care to leave a layer of uniodized liquid below, in order that the contrast in color may be observed. The upper layer will turn blue if as little as 0·3 per cent. of starch is present.

Remarks.—The copper solution commended is sufficiently dilute to offer no interference with the color reaction on account of its own blue color. It was found that at no practical concentration (beginning at 2 per cent.) does the color of the copper solution interfere with the sensitiveness of the test. This strength (0·2 per cent.) is sufficient to prevent the formation of oil of mustard even upon boiling, and we prefer it to more concentrated solutions.

By careful manipulation the presence of 0·2 per cent. of starch can be distinctly demonstrated by this test. Yet, from 0·3 per cent.

upward the starch test by this method is exceedingly plain and quite permanent. An excess of iodine will cause the precipitate to become green, which must be especially borne in mind when testing for small quantities of starch.

B. Copper Sulphate and Potassium Iodide.

Solutions.—(1) Copper sulphate solution (0·4 per cent.). Dissolve 4 grammes of pure crystallized copper sulphate in water to make 1,000 c.c.

(2) Potassium iodide solution (5 per cent.), 5 grammes of crystallized pure potassium iodide are dissolved in water to make 100 c.c.

Directions.—Put *1 gramme* of the powdered black mustard seed into a perfectly dry test tube; add *10 c.c.* of the copper solution and boil. Cool, and carefully add, by means of a burette, about ½ *c.c.* of the above solution of potassium iodide. After a short time, an exceedingly plain and decidedly permanent starch reaction will be developed near the bottom of the tube in the presence of as little as 0·3 per cent. starch.

Remarks.—This test is based on the interesting reaction that takes places when copper sulphate and potassium iodide are brought in contact. Insoluble white cuprous iodide is formed and iodine is liberated according to the following equation:

$$2Cu\,SO_4 + 4KI = 2K_2\,SO_4 + Cu_2\,I_2 + I_2$$

The iodine liberated produces the starch reaction.

Yet, the chemical reaction does not take place in too dilute solutions. The concentration of the liquids and probably other factors influence the speed and completeness of the reaction.

The above-named proportions gave the most satisfactory results and were established by a lengthy series of experimentation.

III. POTASSIUM IODIDE METHOD.

It was found during experimentation with the foregoing test that on boiling powdered mustard seed with potassium iodide solution, the formation of mustard oil is likewise entirely avoided. The idea that potassium iodide be used in the place of copper sulphate in the same manner as in the test II A. then suggested itself. On testing the boiled liquid, after cooling, with iodine U.S.P. test solution, the result proved to be eminently satisfactory. To such an extent is this method in our favor that we now give it the preference over all others in the testing of powdered black mustard seed for starch.

Solutions.—(1) *Potassium Iodide Solution* (5 per cent.), 5 grammes of crystallized pure potassium iodide are dissolved in water to make 100 c.c.

Iodine Test Solution U.S.P. (2 per cent.).

Directions.—Put 1 gramme of the powdered black mustard seed into a perfectly dry test tube; add 10 c.c. of the above potassium iodide solution and boil. Cool, and carefully add to the surface of the bright yellow liquid from one to three drops of iodine test solution, U.S.P., taking care to allow it to flow down the side of the tube, upon the surface of the liquid. The contrast in color between the iodized part and the lower liquid is very striking, and plainly visible with as little as 0·1 per cent. of starch.

Remarks.—The blue coloration by this method is perhaps not quite as permanent as in the copper experiments, yet it is sufficiently characteristic at the time of its formation, and for a reasonable time afterward.

Summary for Black Mustard Seed.—(1) Four methods have been indicated which we submit. As before stated, the potassium iodide test (Test III), seems to us to be preferable.

(2) The potassium iodide test (Test III) indicates the presence of 0·2 per cent. of starch, with all certainty, and of 0·1 per cent. by closely observing the contrast in color.

(3) Hence the following recommendation is made.

(*a*) If not more than 1 per cent. of starch (in the form of starch-bearing seeds, etc.) is considered admissible in black mustard of commerce, the Pharmacopœia should demand that:

When mixed thoroughly with *nine* times its weight of powdered black mustard seed, previously ascertained to be free from starch, the mixture, if submitted, in the quantity of *one gramme*, to the test indicated under Test III, should not give a plain blue starch reaction.

(*b*) If it is desirable to make the pharmacopœial limit lower than 1 per cent. of starch, a correspondingly smaller amount of starch-free mustard seed should be added.

(*c*) If pure black mustard free from starch is demanded, by the U.S.P. when submitted to the foregoing test (Test III), it should show no blue reaction.

WHITE MUSTARD SEED.

The odor of oil of mustard (allyl mustard oil) is not developed when powdered white mustard is boiled with water, a fact which

the researches of Dr. Gadamer (5) and his predecessors sufficiently explain. Yet, with powdered white mustard seed containing starch, the starch-iodine color also disappears, but less rapidly than it does with black mustard seed.

Fortunately, we find that the use of solution of iodide of potassium with white mustard likewise checks the evanescence of the starch reaction, when it is employed in the manner directed for black mustard seed under Test III. Indeed, when applied to white mustard seed, the test is even more sensitive by far than with black mustard, for by means of it we can detect the presence of as little as 0·05 per cent. starch with certainty.

TESTING WHITE MUSTARD FOR STARCH.

Solutions.—(1) *Potassium Iodide Solution* (5 per cent.), 5 grammes of crystallized pure potassium iodide are dissolved in water to make 100 c.c.

(2) *Iodine Test Solution*, U.S.P. (2 per cent.).

Directions.—Put 1 gramme of the powdered white mustard seed into a perfectly dry test tube, add 10 c.c. of the above potassium iodide solution and boil. Cool and carefully add to the surface of the bright yellowish liquid *one drop* of iodine test solution, U.S.P., taking care in adding iodine to allow it to flow down the side of the tube, upon the surface of the liquid. The contrast in color between the iodized upper part and the lower liquid is plainly visible with as little as 0·05 per cent. starch, in which case the coloration of the upper part is decidedly bluish and is permanent for a reasonable length of time.

Summary for Powdered White Mustard Seed.—(*a*) If not more than 1 per cent. of starch (in the form of starch-bearing seeds, etc.) is considered admissible in white mustard of commerce, the Pharmacopœia should demand that :

The sample be mixed thoroughly with *twenty-four* times its weight of powdered white mustard seed previously ascertained to be free from starch; the mixture, if submitted, in the quantity of *1 gramme*, to the test indicated under white mustard, should not give a plain blue starch reaction.

(*b*) If a lower limit is desired by the Pharmacopœia, a correspondingly smaller amount of starch-free white mustard seed should be employed in making the dilution.

(*c*) If pure white mustard, free from starch, is demanded by the U.S.P., it should show no bluish coloration whatever when submitted to the same test.

In conclusion, the author extends sincere thanks to Dr. Sigmond Waldbott, Librarian of the Lloyd Library, for detailed assistance both in experimentation and literary research.

CERTAIN ALKALOIDAL PERIODIDES AND THE VOLUMETRIC ESTIMATION OF ALKALOIDS AS HIGHER PERIODIDES.[1]

By A. B. Prescott and H. M. Gordin.

In continuation of previous work upon perhalides of organic bases (Prescott, Gomberg, Trowbridge and others, 1895–98; *J. Am. Chem. Soc.*, **17**, 775, 859; **18**, 28, 91, 331, 347; **19**, 322, 558) the authors have now obtained the following, as compounds of quite constant composition:

Atropine hydriodide octaiodide, $C_{17}H_{23}NO_3.HI.I_8$.
Strychnine hydriodide hexaiodide, $C_{21}H_{22}N_2O_2.HI.I_6$.
Brucine hydriodide hexaiodide, $C_{23}H_{26}N_2O_4.HI.I_6$.
Morphine hydriodide triiodide, $C_{17}H_{19}NO_3.HI.I_3$.
Aconitine hydriodide hexaiodide, $C_{33}H_{45}NO_{12}.HI.I_6$.

The morphine periodide obtained constant in the given conditions is the same found by Jörgensen in 1870. The composition of the higher periodide of aconitine above written, on the alkaloid formula of Dunstan, is given provisionally. The same conditions insure the formation of the periodide of caffeine, obtained by Gomberg in 1896, namely, caffeine hydriodide tetraiodide.

The conditions necessary for these formations are only those of precipitation from quite dilute water solutions with a constant excess of iodine from first to last, the alkaloid being in a salt or acid solution. In such conditions these are the highest periodides that can be formed. In precipitation from water solutions with excess of the alkaloidal salt, lower periodides are formed in case of atropine, strychnine, brucine, aconitine, not in case of morphine. Some of these lower periodides the authors have analyzed, and others will be examined. In character and behavior the periodides of the

[1]Abstract of a paper presented at the Baltimore meeting of the American Pharmaceutical Association.

vegetable alkaloids agree in general with the perhalides of pyridine and its more immediate derivatives, as these have been previously studied in the same laboratory. Also the reactions of these periodides of the bases of the pyridine type are generally the same as those of caffeine pentiodide, formed when caffeine is in acidulated solution, as found by Gomberg. And these bodies are to be studied with perhalides in general, and with the question of the orders of bases capable of forming perhalides, and the relation of these, in structure, to the double halides. The production of a periodide of bromtriphenylmethane, about to be published by Gomberg, is of interest as an organic perhalide, destitute of any element of the nitrogen family, as was also the iodonium perhalide obtained by Victor Mayer, in 1894, and the sulphon periodide reported in this country by Kastle in the same year.

The higher periodides of the vegetable alkaloids, as named above, are sufficiently stable to give very constant results in the analysis, both for the additive iodine and for that of the hydriodide. Obtained in crystalline forms they were found to have the same composition as the amorphous precipitates after washing and drying. In the volumetric procedure, however, washing is avoided, an aliquot portion of the filtrate being taken in which to titrate back with the thiosulphate for the excess of iodine added. In this way is obtained a very accurate measure of the iodine consumed in supplying the additive iodine of the periodide. The more firmly bound iodine of the alkaloidal hydriodides, not responding to reducing agents, is supplied by the iodine of the potassium iodide, that of Wagner's reagent, or iodo-potassium iodide, always employed. This probable explanation of the reaction of the precipitation was verified by the authors in a quantitative investigation at some length.

The results of analysis of the periodides were found to be well sustained by constant results in volumetric estimation, the alkaloid to iodine factors calculated from the chemical formulæ of the periodides being used in every case for the volumetric work, with agreement quite satisfactory, as presented below. The calculation for each alkaloid was made upon its chemical formula, as given in a previous paragraph:

Ratio of alkaloid to 1 of iodine.	Total Iodine calc.	Total Iodine found.	Additive Iodine calc.	Additive Iodine found	Per cent. sol. made	Per cent. found by vol. anal.
Atropine, ...	79·74	79·48	70·88	70·98	0·50	0·47
0·2849		80·13		71·15	0·40	0·36
		79·62			0·30	0·28
Strychnine . . .	72·66	72·70	62·28	62.14	1·000	1·026
0·4390		72·54		62·34	1·612	0 633
Brucine	69·21	69·04	59·32	59·19	1·000	0·999
0·5179		79·04		59·37	0·5	0·497
Morphine . . .	64·03	63·80	48·02	48·29	0 518	0·525
0·74918		63·54		48·44	0·259	0·257
					0·100	0·105
Aconitine . . .	57 85	55·93	49·58	49·03		

In the case of atropine the authors obtained two mercuric iodides respectively $C_{17}H_{23}NO_3HI.HgI_2$ and $(C_{17}H_{23}NO_3HI)_2HgI_2$. They can be prepared by treating the periodide with metallic mercury, and in other ways described.

In the volumetric estimations, the iodine solution is made of decinormal strength, with sufficient potassium iodide and a corresponding strength of solution of sodium thiosulphate is used. To a known volume, constituting an excess of the iodine solution, a measured quantity of an aqueous salt solution of the alkaloid is added gradually; the mixture is shaken until the liquid becomes clear, when an aliquot part of all is filtered off and the excess of iodine determined by titrating with thiosulphate to an end reaction with starch.

The authors have elaborated a volumetric method of opium assay, upon the following plan: The opium alkaloids are set free by action of ammonia with certain solvents applied to the powdered opium. The free narcotine, paraverine, codeine and thebaine are then removed by percolation with benzene (bensol), after which the morphine is wholly taken out by percolation either with amyl alcohol or with acetone. Both these solvents have been used. The percolation is effected well by admixture of dry common salt with the opium powder. The solvent is evaporated from the percolate of morphine, and the residue taken up with lime water, whereby the alkaloid is purified from color and other extraneous matters. The filtered lime solution is acidulated, and the morphine in it estimated directly as periodide. One gramme of opium is quite sufficient, and two or more final titrations can be obtained from this quantity.

In the results of opium assay by this method, repeated operations give figures agreeing quite closely with each other. So far as com-

pared with the pharmacopœial assay, the results do not give lower percentages, but in some cases give higher percentages.

Other drug assay methods, with volumetric estimation of the alkaloid as periodide, are in progress of investigation.

So much of this article as relates to atropine was published in substance in *J. Am. Chem. Soc.*, for May, 1898, and the portion relating to opium assay was published in *Phar. Archives*, for June, 1898.

AROMATIC WATERS.[1]

By H. V. Arny.

Of the aromatic waters of the Pharmacopœia, six are directed to be prepared from volatile oil, with the aid of inert absorbent material, with the hope of creating greater solubility by minute subdivision of the oil.

That absorbent material is best adapted to this purpose has been a question of much discussion and uncertainty, and accordingly we see it changed in successive Pharmacopœias, from magnesium carbonate to absorbent cotton, and from the latter to precipitated calcium phosphate, which is the absorbent directed by the present Pharmacopœia. Hearing complaints from practical pharmacists, that the waters manufactured by the process of 1890 do not keep so well as those made by the absorbent cotton process of 1880—that they showed, in shorter time, the presence of microscopical organisms—the writer prepared in December, 1897, the six waters in question, by the processes of the two Pharmacopœias, and examined the same in July, 1898, seven months later.

The method of storing the samples was as nearly as possible that in vogue in a retail pharmacy; the waters being kept in 100 c.c. bottles filled to the shoulder, corked and capped with paper. At the same time, samples of each were placed in similar 100 c.c. bottles and stoppered with merely a plug of absorbent cotton.

After seven months' rest, each sample was examined, and whenever a precipitate had occurred (invariably a flocculent one, showing cellular structure under the microscope), it was collected on a tared filter and weighed, after being kept at the temperature of 100° for an hour.

[1] Read before the American Pharmaceutical Association at the Baltimore meeting, September, 1898.

The following table shows the influence of time, not only as to quantity of microscopical growth, but also as to approximate strength of odor. Those marked *a* designate the water in corked bottles; *b* being those stoppered with cotton.

		Odor.	Precipitate in 100 c.c. (Expressed in milligrammes).
Anise,	1880 *a*.	strong.	none.
	1880 *b*.	faint.	none.
	1890 *a*.	strong.	0·5.
	1890 *b*.	faint.	none.
Camphor,	1880 *a*.	strong.	none.
	1880 *b*.	very faint.	1·4.
	1890 *a*.	medium.	0·6.
	1890 *b*.	very faint.	1·8.
Cinnamon,	1880 *a*.	strong and modified.	trace.
	1880 *b*.	faint.	none.
	1890 *a*.	medium.	none.
	1890 *b*.	faint.	none.
Fennel,	1880 *a*.	faint.	0·8.
	1880 *b*.	odorless.	none.
	1890 *a*.	medium.	1·3.
	1890 *b*.	odorless.	0·7.
Peppermint,	1880 *a*.	strong.	none.
	1880 *b*.	faint.	none.
	1890 *a*.	strong.	trace.
	1890 *b*.	very faint.	0·5.
Spearmint,	1880 *a*.	strong.	none.
	1880 *b*.	strong.	none.
	1890 *a*.	strong.	none.
	1890 *b*.	strong.	none.

As no attempt was made at sterilization of the waters, objection may be raised as to the scientific value of this data, yet, representing the normal treatment of these products in the ordinary pharmacy, we may glean some facts of possible value.

It will be first noticed that cinnamon, peppermint and spearmint waters are comparatively stable, the specimens of the last named being almost as fine after seven months as on the day they were made.

Again, we see that using a plug of cotton as a stopper, unless accompanied by sterilization, is worthless, and, even with the latter precaution, loss in strength is to be expected. Notice that in every case, save spearmint, the cotton-stoppered waters were either odorless or of faint odor.

Lastly, we find that, out of the eight samples containing appre-

ciable quantities of microscopical fungi, seven were made according to the method of 1890 and only one by the pharmacopœial process of 1880. Hence there seems some reason for the complaint that the waters made by the former process do not keep as well as those made by the latter method.

The expression of strength of samples by the terms "strong," "faint," etc., is so very vague that the writer endeavored to find a rational method of estimation of quantity of volatile oil in the waters under examination.

Owing to the complexity of the constitution of the several oils employed, any effort toward quantitative chemical estimation seemed useless, and the writer turned his attention to the physical separation of the oil from the water.

At first g'ance the process seems simple and easy. It is to extract the oil from the water by agitating with ether or other suitable solvent; but difficulty was encountered in attempts to separate the oil from the extraction solvent, owing to the tendency of volatile oils to spontaneous evaporation.

Taking a mixture of oil of peppermint and water (2 to 1,000) as a type, a large number of attempts at quantitative extraction were made. As solvents, ether, chloroform, benzin and rhigolene (B. P. 20° C.) were employed, and the separation of the oil from the solvent was attempted by evaporation between 30°–40°, spontaneous evaporation from various shaped vessels, evaporation in closed vessels, under gentle passage of a dried current of air, both at ordinary temperature and with refrigeration, and, lastly, suction, with the passage of the air over sulphuric acid.

All showed loss of oil save the process last mentioned, in which there was always excess of the theoretical weight, despite the total exclusion of moisture, with calcium chloride, soda-lime and sulphuric acid and the purification of solvents by redistillation and drying over exsiccated copper sulphate or metallic sodium, as occasion demanded. Accordingly, after several months' work, this line was reluctantly abandoned, and means of indirect estimation were sought.

In surveying the field of volatile oils, there is one which stands distinct by reason of its simple composition—one whose quantitative estimation is a matter of no great difficulty. This oil is that of gaultheria—methyl salicylate.

From this oil aromatic water was prepared by the calcium phosphate process directed for official waters of the Pharmacopœia of 1890, by the cotton process of 1880, the percolation being conducted at the rate of 30 drops a minute, by simple agitation of the oil with water at ordinary temperature for two days and subsequent filtration, and lastly by hot solution, the process being performed by heating the oil and water for fifteen minutes in a flask with upright condenser attached, the solution on cooling being filtered. This modification of the usual hot-water process is an improvement in that the shaking of a hot flask is obviated and that the loss of oil by evaporation is reduced to the minimum. In all the methods employed, the pharmacopœial ratio of oil and water (2 to 1,000) was followed.

The finished waters were assayed by the volumetric process of Simonson and Ewing (*Proc. A. Ph. A.*, 40, p. 196), modified by Kremers and James (*Ph. Rev.*, 16, p. 130), namely, saponification with a definite quantity of normal volumetric solution of potassium hydrate and titration of the excess of alkali with decinormal acid. The difference in quantity of alkali before and after saponification, represents the quantity used by the oil of wintergreen, and this, expressed in cubic centimetres of normal alkali, multiplied by the methyl salicylate factor, 0·152, gives the quantity of oil, in grammes, in the sample.

The result of these assays were as follows:

Process.	Quantity of Water used (C.C.).	Amount Normal Alkali used in Saponification (in C.C.).	Amount of Oil in Sample (in Grammes).	Percentage of Oil.
Calcium phosphate *a* . . .	50	0·23	0·03496	0·06992
b . . .	50	0·22	0·03344	0·06688
Cotton *a*	40	0·16	0·02432	0·0608
b	40	0·17	0·02584	0·0646
Agitation with water *a* . .	40	0·16	0·02432	0·0608
b . .	40	0·17	0·02584	0·0646
Hot water with upright condensation *a I* . . .	50	0·28	0·04256	0·08512
Hot water with upright condensation *a II* . . .	50	0·29	0·04408	0·08816
Hot water with upright condensation *b*	50	0·23	0·03496	0·06992

Samples *a* and *b* in each case are from different lots, and it will be seen that each pair agree fairly well, except the two batches

made by upright condensation, of which one sample contains about 0·07 per cent. of oil, and the other almost 0·09 per cent. This can be understood when it is stated that neither sample, despite repeated filtrations, were absolutely clear, and that sample *a* was a trifle more opalescent than sample *b*. In each case, control experiments were made, and the only deviation was in the assay of sample *a*, made by upright condensation, when between the two estimations there was a difference of $\frac{1}{10}$ c.c. decinormal solution, or a difference of 0·003 per cent.

Provided an aqueous solution of oil of gaultheria can be taken as typical of all aromatic waters, the following conclusions may be deduced:

(1) The quantity of oil actually dissolved by water is so small, that the various processes have but little advantage over each other on the score of strength.

(2) The cotton process yields a product no stronger than that made by simple agitation.

(3) Hot solution yields the most concentrated product, and even this, when absolutely clear, will be scarcely stronger than the calcium phosphate product.

CLEVELAND, O., August 6, 1898.

AN ADULTERATED GAMBOGE.

BY J. F. WOOLSEY.

Gamboge is obtained in the market as block or mass, pipe and powdered; the powdered form being made from block and broken pipe. The latter, alone, will be considered.

As usually obtained, it is of a bright orange-yellow color, containing 70–80 per cent. resin, 3–4 per cent. ash, moisture 4–6 per cent., and gum. A good gamboge contains 75 per cent. resin. A trace of starch is usually found, but, owing to the method of collecting and packing, is not considered an adulteration.

Recently a lot of powdered drug was examined which was grossly adulterated. The color of the lot was more of a dull ochre than orange—scarcely noticeable unless compared with a good article.

Upon treatment with alcohol of 95 per cent., less than 40 per cent. was soluble, leaving over 50 per cent. undissolved on the filter. Starch or flour would seem to be the most natural adulterant, and

this appeared to be the case in this instance as evidenced by the large amount of starch indicated. In testing for this substance, the method of Eberhardt (AMER. JOUR. PHARM., 1896, p. 371) was employed, as it gives results not to be had by that of the Pharmacopœia.

ANALYTICAL DEPARTMENT OF
ELI LILLY & COMPANY, July 5, 1898.

VOLUMETRIC DETERMINATION OF FORMALDEHYDE.

The undersigned is indebted to Mr. Lyman F. Kebler, chemist for Smith, Kline & French Company, of Philadelphia, for calling his attention to an error in the method of calculating the per cent. of absolute formaldehyde from the result of titration, in a paper published in the February number of this JOURNAL. In several of the methods discussed, the quantities were so adjusted that the number of cubic centimetres of volumetric solution consumed, multiplied by 2, would indicate the per cent. of absolute formaldehyde present, each cubic centimetre being equivalent to 2·0 per cent. Through an inadvertent substitution of the process of division for that of multiplication, it was incorrectly stated that each cubic centimetre represented 0·5 per cent. of formaldehyde. The error occurs on page 88, line 19; page 90, line 12; and page 91, line 21. In each case *2·0* per cent. should be read instead of *0·5* per cent. This error does not affect any of the conclusions arrived at in the paper.

CARL E. SMITH.

PHILADELPHIA, PA., August 10, 1898.

GLEANINGS FROM THE MEDICAL JOURNALS.

BY CLEMENT B. LOWE, M.D.

THE RENEWAL OF PRESCRIPTIONS, ETC., IN GERMANY.

A recent decision of the Ministry of Public Worship, of Education and of Medical Affairs in Germany, is of interest. Prescriptions for internal use in Germany may not be repeated for the patient by an apothecary unless the physician signifies his approval in writing. External remedies, however, may be repeated. Substances prescribed as eye-washes, for inhalation, for subcutaneous injection, or for clysters and suppositories are, by this recent decision,

classed among internal remedies as regards their repetition, though the regulations as to bottles and labels that hold external remedies still apply to them.—*Phila. Med. Jour.*, July, 1898.

ANALYSES OF SAMPLES OF GROUND COFFEES.

Secretary Edge, of the Department of Agriculture, has recently received from Professor Cochrane a report of his analyses of a large number of samples of "ground coffee" and "ground coffee compounds," selected in Eastern Pennsylvania. The report, in part, is as follows:

"Composed of bran, cracked wheat and a little caramel; chiefly wheat bran, sweetened and roasted."

"Sample bears about the same relation to coffee as wheat screenings do to wheat."

"Roasted sweetened wheat, 75 per cent., coffee, 25 per cent."

"Composed of the roasted and rather finely broken grains of wheat and barley."

"Sample is composed chiefly of wheat bran."

"Composed of roasted cereals and husks of coca-beans."

"Coffee about 64 per cent.; pea hulls, 13 per cent.; and chicory, 23 per cent."

"Sample is roasted rye."

"Sample is roasted barley."

"Sample is composed of wheat, chicory, coffee and peas, coarsely ground."

"Composed of peas about 69 per cent.; grains, 29 per cent.; and chicory about 2 per cent."

"Sample is composed of bran, cracked wheat, chaff and caramel."

"Sample is composed of wheat, chicory, coffee and peas all coarsely ground."

Of all the samples examined, but four were found to be composed of pure coffee, and of these three were pronounced to be of "very inferior quality."—*Phila. Med. Jour.*, July 30, 1898.

ADULTERATION OF WHEAT FLOUR.

This seems to be a frequent and growing evil. When the adulterant employed is corn, this though an imposition on the public, is not harmful, and does not especially affect the food value of the product. The Maine Board of Agriculture has discovered that a busi-

ness concern is extensively advertising a substance called "mineraline," which is asserted to make the flour "whiter and nicer," and not to injure it in any way, and to be not at all injurious to health. It is supplied in various grades, from $8 to $20 per ton, and is asserted to net the dealer from $400 to $1,600 per car-load. Upon examination, mineraline is found to be ground soap-stone, a substance absolutely valueless as food, and whose use may be quite prejudicial to health.—*Phila. Med. Jour.*, July 23, 1898.

THE OLEANDER AS A DRUG.

In the *Indian Medical Record* for May 1st, Assistant Surgeon, H. D. Pant, of Gonda, reports a case of poisoning with the leaves of the oleander (Nerium odorum). A Mussulman coachman pounded seven leaves of the plant with water and sugar candy, and drank the sherbet, having been advised by a quack to take it as a diuretic for gonorrhœa. Severe vomiting set in, with violent retching and slight pain in the stomach. The pulse was extremely slow, only thirty-six to the minute, and feeble. The man recovered in the course of a day or two. The author likens the action of oleander on the heart to that of digitalis, and suggests the medicinal use of a mild tincture on account of its rapid action and its sustained effect.

NEW HOT-WATER BOTTLES.

The expensiveness and want of durability in the ordinary rubber bottles and ice-bags which have become so essential in the sick chamber, has long been a perplexing problem. Experiments with rice paper, covered inside and out with a coating of Japanese lacquer, led Professor Jacobsohn to recommend this material to the Berlin Society of Internal Medicine as far superior to rubber. In strength, flexibility, imperviousness, lightness and durability it leaves little to be desired.—*Med. News*, July 9, 1898.

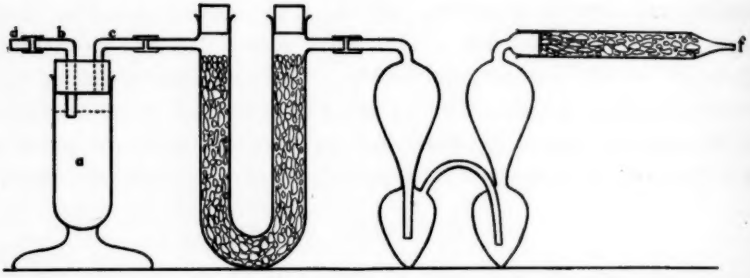
RECENT LITERATURE RELATING TO PHARMACY.

TESTS FOR ALBUMEN AND SUGAR IN URINE.

The following two tests—one a qualitative test for albumen in urine, the other a quantitative test for sugar—were lately proposed by Wm. C. Alpers, in a paper presented at the last meeting of the New York State Pharmaceutical Association.

The test for albumen consists in the use of mercury succinimide. The suspected urine is acidulated with hydrochloric acid, and an equal quantity of a 1 per cent. solution of mercury succinimide added, when, at the presence of albumen, the well-known white cloudiness will soon appear. This test is so sensitive that the presence of one part of albumen in 150,000 can be detected by it.

For the quantitative test for sugar, the following apparatus is constructed: A test-tube (*a*) on a foot, holding 50 to 60 c.c., is provided with a rubber stopper with two perforations; through one perforation a bent glass tube (*b*) is put, so that its lower end projects about an inch from the stopper, thus reaching into the fluid to be examined. Through the other perforation a similar glass tube (*c*) is put, whose lower end is even with the stopper. A quantity of urine is weighed into the apparatus, a piece of yeast added and



the stopper put on. The outlet at (*d*) is closed, and the tube (*c*) connected with a calcium-chloride tube and potash bulbs, such as are used in combustion analysis. The potash bulbs are weighed beforehand.

Fermentation soon begins, and the carbon dioxide generated by it rises in the tube and passes through (*c*) into the calcium tube and potash bulbs. After the reaction ceases (about eight to ten hours), the tube (*b*) is carefully pulled up until its lower end is just above the level of the liquid. Suction is then applied to the outer end (*f*) of the potash bulbs and the cap at (*d*) removed, so that a current of air will pass through the whole apparatus. Whatever carbon dioxide is still lingering in the apparatus is thus drawn into the potash bulbs, where it is dissolved, while all traces of moisture that may be carried along by the draft are absorbed in the calcium tube.

Finally, the bulbs are weighed again, and the increase in weight is the amount of carbon dioxide generated by the fermentation. From this the glucose can easily be calculated, by the following argument:

$$C_6H_{12}O_6 = 2C_2H_5OH + 2CO_2$$

Glucose.	Alcohol.	Carbon Dioxide.
(179·58)	(91·80)	(87·78)

Each 87·78 parts of carbon dioxide represent, therefore, 179·58 parts of glucose, or 1 part is the equivalent of 2·0458 parts of glucose. By multiplying the calculated weight of the carbon dioxide, therefore, by 2·0458, the exact amount of glucose contained in the urine under examination can be ascertained. From this the percentage, as well as the total amount of glucose passed in twenty-four hours, can easily be calculated.

A number of experiments made with this apparatus with solutions of glucose of known strength, showed that an almost absolute exactness is obtained.

PRESERVATION OF GRAPE JUICE.

The process of preparing unfermented grape juice is described by J. Craig (*Canada Expt. Farm's Rpts.*, 1896, p. 165), and sixteen experiments on the preservation of the juice are reported. The results indicate "that the natural flavor of the grape juice may be preserved intact by raising the temperature of the juice gradually to 170° F., keeping it at this point for ten minutes, and then quickly bottling it, taking care to use absolutely air-tight and thoroughly sterilized vessels. . . . The addition of sugar in the proportion of 4 ounces to each quart of liquid will improve the quality and palatability of the juice of the more acid varieties of grapes. . . . The use of antiseptics, such as salicylic acid, should not be encouraged."

CASHEW POISONING.

In an article by Williams in *Jour. Jamaica Agric. Soc.*, 1897, p. 319, on cashew (mesquite) poisoning, the author says that when animals are fed with this legume (*Prosopis juliflora*) they become slick, glossy, and look well. The animals seem very fond of it. But when it is damaged by rains, heavy dews, etc., it is poisonous. Animals that eat it when it is in the poisonous condition become

distended with gas, and rupture of the digestive system may result. Clots of blood have been found in the cerebellum. The first symptoms are colicky pains with abdominal distension; the animal paws, lies down and rises frequently, and shows an inclination to thrust its head into corners. It may lie on its back with feet doubled up and groan with pain. Cold sweats occur, breathing becomes thick and labored, and there are frequent attempts at micturition. Urine is voided in small quantities. The remedy is puncturing the abdomen and drawing off the gases, together with hot fomentations to abdomen and loins, and the administration of oil and hot-water enemas. The animal may finally die from collapse.

PECTIN OF GENTIAN.

Bourquelot and Hérissey have succeeded in isolating the pectin of gentian. They exhaust the drug with alcohol, removing the alcohol and dissolving the residue in ten times its volume of water in an autoclave (110°). The pectin is obtained from the latter by precipitation with alcohol containing hydrochloric acid. The precipitate, purified by washing with alcohol and then ether, and dried, is soluble 1 part in 100 of water, and is easily oxidized by nitric acid to mucic acid —*Jour. Pharm. Chim.*, 1898, p. 8; abs. in *Pharm. Zeit.*, 1898, p. 339.

Poisoning by Insect Powder.—A child, eleven months old, got a lot of the powder in the mouth, nose and eyes. The pulse became weak, the breathing reduced, cramps and vomiting were produced. The child recovered upon being given an emetic.—*Apoth. Zeit.*, 1898, p. 393.

High Specific Gravity of Urine.—M. D. Hodge reports in the Virginia Medical Semi-monthly (1898, p. 99), the case of a patient whose urine had a specific gravity of 1·120. The amount of chlorides was 3·9 per cent. by weight. On inquiry it was found that the woman ate largely of salt pork, ham, mackerel and seasoned her other food with a considerable amount of salt. She rarely drank water, but used tea and coffee.

Adulteration of Coffee with Sugar.—In his quarterly report to the Chester County Council the public analyst states that he examined a sample of coffee which contained an excess of sugar. This he said was due to a practice of roasting coffee with a certain proportion of sugar, which would increase the weight of coffee from 5 to 10 per cent. This admixture was so skillfully done that each berry was coated with the sugar, and any one buying such coffee in the berry would think he was obtaining it pure. It was an innocent and at the same time profitable adulteration, sugar costing a penny a pound was sold at the rate of one shilling or more.—*Brit. and Col. Drug.*, 1898, p. 739.

EDITORIAL.

ANNUAL CONVENTIONS.

It is noticeable this year that many of the conferences of large scientific bodies have been in our large cities. In America the American Association for Advancement of Science met in historic Boston, August 22–27; the American Pharmaceutical Association met during August 29th–September 3d in Baltimore, a great commercial and manufacturing city. Abroad we find that the British Pharmaceutical Conference was held at Belfast, a city which vies with any in Great Britain in enterprise and self-reliance; and the Third International Congress of Applied Sciences met in the Austrian Capitol, Vienna.

Conventions held in large cities are, as a rule, no doubt better attended and the results possibly extend further than those held elsewhere. The large cities have certain advantages and possibly disadvantages at this time of the year for the holding of large conventions. There are increased accommodations and attractions, and, as a rule, in or near large cities are the prominent educational institutions, museums, and art galleries, and near to them are other places of interest and pleasure. In a recreative sense a far greater number can have their individual tastes satisfied in those meetings that are held in large cities than when the same are held in smaller towns. At the Boston meeting of the American Association for the Advancement of Science, see what the sail by boat to historic Salem, the day at Cambridge, etc., meant to the members. Then, too, all of the other treasures and avenues of pleasure in Boston were open to those who chose to avail themselves of them. At the American Pharmaceutical Association there were equally as attractive excursions; as the all-day ride on the Chesapeake, including visit to Naval Academy and historical rooms of the State House at Annapolis; the carriage ride through Druid Park, noted the world over for striking natural scenery; the trip to Washington, Mt. Vernon, and to Johns Hopkins University—all of these excursions were very profitable and pleasurable both at the same time.

These scientific conventions are the meetings that ought to draw the man fresh from college. If his hopes and aspirations are directed for a greater knowledge and broader education, he ought to journey so soon as he can to conventions of his calling. The local and national meetings will be a source of greater profit intellectually, physically and morally, and cause his life-work to assume a truer purpose and greater usefulness than anything else he can do. To-day it is necessary for progressive men and women to be affiliated with the various organizations of their profession. The President of the British Pharmaceutical Conference, Dr. Symes, truly said that the value of these conferences to the qualified man are that they indicate "that there is no finality to his knowledge; that he has merely entered by the legitimate portal into the field of applied science, investigation and research; it offers him encouragement to devote himself more closely to the higher branches of his calling, and thus not only give deeper interest to it, but to sweeten the labor and drudgery attendant on the more commonplace matters which go to make up the daily round of duty."

The President of the American Pharmaceutical Association attested in a more personal way to the value of this Association to him. He says: "The American Pharmaceutical Association is to me one of the most delightful, attractive

and helpful organizations that I have ever been connected with. It has not been my privilege to attend all of the annual meetings, but when present, I realize how much I have lost by absence. . . . While as a member I rejoice in the personal advantages secured, I must extend my sympathy to those who are not members, and my regret that so many of our craft are blindly or foolishly neglecting and rejecting, dividends larger and better in every way than can possibly be secured by any other investment of time and money.

Some of the benefits that accrue in attending these conventions in an intellectual sense are that:

(1) They direct and stimulate one's thoughts and energies upon questions of scientific interest as well as practical benefit.

(2) They are of direct and immediate benefit to the investigator, in that the discussions upon the results of his labors enable him to perfect these investigations as well as to disseminate the results.

(3) The few days of relaxation and time for thought and contact with others ofttimes saves the thinking man much labor and directs his energies along the most profitable lines.

(4) To the student fresh from college they serve to arouse aspirations and ambitions which admirably supplement the college training and make him to feel that he is in the larger school during all the remainder of his days of life.

The practical pharmacist will find that affiliation with and attendance at his local, State and National Associations are necessary if he wishes to possess the exalted title of a "practical" pharmacist.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

ATLAS DER OFFICINELLEN PFLANZEN.—Darstellung und Beschreibung der im Arzneibuch für das deutsche Reich erwähnten Gewächse. Zweite Verbesserte Auflage von Darstellung und Beschreibung sämmtlicher in der Pharmacopœia Borussica aufgeführten Officinellen Gewächse von Dr. O. C. Berg und C. F. Schmidt. Herausgegeben durch Dr. Arthur Meyer und Dr. K. Schumann. Lief. xxii; Tafel cxxiv–cxxix.

In this number of the Atlas are contained monographs on *Sassafras officinale*, Th. Fr. L. Nees. u. Eberm.; *Laurus nobilis*, L.; *Beta vulgaris*, Linn., *var. Rapa* Dumort; *Cubeba officinalis*, Miq., and *Cannabis sativa*, Linn. Excellent illustrations of the outer morphology of these plants accompany the articles.

VIII CONGRÈS INTERNATIONAL DE PHARMACIE ET DES SCIENCES QUI S'Y RATTACHENT TENU À BRUXELLES LES 14, 15, 16, 17, 18 et 19 AOUT, 1897.—*Compte Rendu*, par M. Duyk, Secrétaire-général.

An account of the Eighth International Pharmaceutical Congress has already been given in this JOURNAL (1897, p. 464). The present publication gives a detailed account, in some 571 pages, of the proceedings, together with a list of members, officers, etc.

ALKALOIDAL ESTIMATION.—A bibliographical Index of the Chemical Research prepared from original Literature for the Committee of Revision. By Paul I. Murrill, under the direction of Albert B. Prescott. Published by the

Committee of Revision of the Pharmacopœia of the United States of America: 1890–1900.

The object of this work is to furnish a descriptive index of the work that has been done on the estimation of alkaloids, rather than to abstract or summarize it. References to republications and abstracts as well as to the original publication are given.

BEITRAG ZUR KENNTUISS DER FLECHTEN UND IHRER CHARATKERISTISCHEN BESTANDTHEILE.—Von O. Hesse. (Erste Mittheilung.) Separat-Abdruck aus dem *Journal für praktische Chemie.* Neue Folge, Band 57. 1898.

The author has obtained a large number of compounds from different species of Cetraria, Cladonia, Darbishirella, Dendographa, Evernia, Roccellaria, Reinkella, Ramalina, Roccella and Usnea. For the extraction of these various lichens Hesse employed ether. He obtained the following compounds: Usnic acid, $C_{18}H_{16}O_7$, the M. P. of which is 196°. Barbatinic acid, for which Stenhouse and Groves gave the formula $C_{19}H_{20}O_7$, but which Hesse finds to be $C_{22}H_{24}O_8$, and M. P. 186°. Usnaric acid ($C_{30}H_{22}O_{15}$), upon heating, becomes brown and black, and does not melt at 260°. Usnarin has the M. P. 180°. Vulpinic acid has the formula $C_{19}H_{14}O_5$. Divaricatic acid has the formula $C_{22}H_{26}O_7$, and M. P. 129°. Evernic acid has the formula $C_{17}H_{16}O_7$, and M. P. 168–169°; on heating with barium hydrate, it yields orcin, and at 158°, evernic acid ($C_9H_{10}O_4$). Ramalic acid has the formula $C_{17}H_{16}O_7$, and M. P. 179°, and yields, with barium salts, the same products as evernic acid. Erythrin has the formula $C_{20}H_{22}O_{10} + H_2O$, and it does not lose the molecule of water at 137°, but at 148°. Oxyrocellic acid has the formula $C_{17}H_{32}O_5$, and M. P. 128°. Rocellic acid has the formula $C_{17}H_{32}O_4$, and M. P. 129–130°. Lecanoric acid has the formula $C_{16}H_{14}O_7$, becomes anhydrous at 166°, melts, and, upon cooling, its solution with glacial acetic acid changes entirely into Orsellinic acid. Rocellaric acid forms beautiful needles, melting at 110°. Rangiformic acid has the formula, according to Hesse, of $C_{21}H_{36}O_6$, contrary to Paterno, who gave the formula as $C_{11}H_{18}O_3$. This acid melts at 102°, and, upon heating with hydrochloric acid at 119°, yields Norrangiformic acid ($C_{20}H_{34}O_6$). Atranorin is not an acid, as Paterno and Oglialora designated it, viz., as Atranoric acid. The formula of Atranorin is $C_{19}H_{18}O_8$; M. P. is 187–188°, decomposing at this temperature also. On heating Atranorin with glacial acetic acid in a tube at 150°, it yields Physicol, having the formula $C_7H_8O_3$, and M. P. 104–105°, and an ester ($C_{10}H_{12}O_4$), which is identical with Physcianin, Atraric acid and Ceratophyllin. On treating Atranorin with alcohols an acid, called by Hesse Hämatommic acid ($C_8H_7O_3.COOH$), is obtained. Atranorinic acid has the formula $C_{18}H_{18}O_9$, and M. P. 157°. Protocetraric acid has the formula $C_{30}H_{22}O_{15} + H_{20}$. On heating alone, it does not melt, but becomes uniformly blackish, and on heating with alkalies and alkali carbonates, yields Fumaric acid and bitter Cetrarsäure, $C_{26}H_{20}O_{12}$. Lichesterinic acid has the formula $C_{17}H_{28}O_4$, and M. P. 109–110° (not 120°, as previously given). Chrysocetraric acid forms beautiful golden-yellow shining plates and needles, the formula of which is $C_{19}H_{14}O_6$, M. P. 196–198°, and on heating with barium hydrate and water, yields oxypulvinic acid ($C_{18}H_{12}O_6$).

PRINCIPAL POISONOUS PLANTS OF THE UNITED STATES. By V. K. Chestnut. Washington: Government Printing Office.

In the annual report of the Botanist for 1894 was emphasized the importance

of doing something to lessen the increasing number of fatal cases of poisoning due to carelessness or to a lack of correct knowledge of our poisonous plants, and as a result the Secretary of Agriculture, in November, 1894, appointed Mr. V. K. Chestnut as an assistant in the Division of Botany, to take charge of such a line of work. In addition to the chemical and physiological investigations which have since been in progress, it has seemed desirable to distribute at once some simple but authoritative account of our commonest poisonous plants. In the prosecution of this work a novel method of securing correct information about actual cases of poisoning has been adopted. Through newspaper clipping bureaus the Division of Botany receives notices of all the cases of poisoning that are recorded in the principal newspapers. Then, through the persons mentioned by name in these articles or through the local postmaster, they get into correspondence with the physician in charge of the case, secure a specimen of the plant which is responsible for the poisoning, and place on file a complete record of the symptoms, treatment and results. By this means they have secured a large amount of authentic and valuable information, additional to the published statements, the partial benefit of which is given to the people in this publication, and the remainder of which will be used from time to time in more detailed publications on the poisonous qualities of particular plants.

The plants which have been considered, about fifty in number, include most of the important poisonous species. Each is illustrated, wherever necessary, by an original drawing from authentic specimens, and is briefly described in a popular way. This, together with the liberal use of common names and a brief outline of the geographical distribution, will doubtless enable individuals in different localities to recognize any of the plants.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The fiftieth anniversary of the American Association for the Advancement of Science was held in Boston, August 22 to 27, 1898. This year the Association held its meeting also in the place of its birth, for it was in Boston, in 1848, that the American Association met for the first time, being really the outcome of the American Association of Geologists and Naturalists. The organization to-day is divided into nine sections.

On Monday morning, August 22d, at 10 o'clock, the meeting was formally opened in Huntington Hall. On the platform was a large and distinguished company, including not only well-known scientists from home and abroad, but also the Governor of the Commonwealth, the Mayor of the city, the Bishop of the Diocese and other clergymen. From abroad were Prof. Désiré Charnay, of Paris; Dr. A. Sasse, of Zaandam, Holland; Prof. Benjamin Howard and Mr. Conrad W. Cooke, of London.

The meeting was called to order by Prof. Wolcott Gibbs, the retiring President. At his request Bishop William Lawrence, of the Diocese of Massachusetts, offered prayer. Professor Gibbs then introduced Governor Wolcott, to extend the greetings of the Commonwealth.

Mayor Gurney and President J. M. Crafts, of the Massachusetts Institute of Technology also made brief addresses.

The president-elect, F. W. Putnam, of Harvard University, was introduced by the retiring president, and made a brief address.

Professor Désiré Charnay was introduced and he spoke briefly in French. A message was read from the Russian Geological Committee of St. Petersburg, sending to the American Association respectful congratulations and good wishes. After listening to announcements of meetings to be held, invitations to partake of the hospitalities of societies and clubs, and other matters of detail, the Association adjourned until 2.30 o'clock in the afternoon.

In the afternoon the vice-presidents of the various Sections gave their annual addresses. Among which may be mentioned that by Dr. Whitman, "On the Perception of Light and Color;" Dr. Farlow, on "The Conception of Species as Affected by the Recent Investigations on Fungi;" Dr. Smith, on "The Electrical Current in Organic Chemistry;" etc.

In the evening the retiring president, Wolcott Gibbs, gave the annual address, the topic being, "On Some Points in Theoretical Chemistry."

On Tuesday the Sections met at 10 A.M. and 2 P.M. to hear the reading of scientific papers. The amount of work accomplished at this meeting was enormous, as on this day alone, a total of 278 papers were presented, making an average of thirty-one for each of the nine Sections. The topics and treatment were eminently scientific and it is doubtful if the Association ever had the pleasure of a larger attendance of enthusiastic scientists and more numerous technical and scientific papers were ever presented. Among the botanists, the foremost exponents of cytology discussed their recent labors; the morphologist and ecologist met with the systematist, and all contributed valuable papers. Not only was there a harmony and a union in the Botanical Section, but in all the Sections, and some idea of the nature of the problems considered may be gleaned by giving abstracts of a few of the papers presented by some of the Sections.

In a paper on "The Ripening of Cheese" S. M. Babcock and H. D. Russell stated that it has heretofore been supposed that the process was aided by the action of bacteria. The authors were unable to account for the many discrepancies which occurred in the process, by explaining them as caused by bacterial action. They added mild antiseptics, such as ether and chloroform to the milk, which would stop the action of bacteria.. Such milk underwent changes similar to those that occur in cheese. From these it was evident that the bacteria were not the agents causing the ripening of cheese, but it is probable that the milk contains an unorganized ferment capable of digesting casein. They gave the name of galactase to the ferment.

Dr. G. Frederick Wright described a newly discovered Strontian cave at Put-in Bay, O. Strontium does not occur native, but is found chiefly as sulphate. This forms crystals of a delicate blue color. These crystals occur in many places in Europe; but the principal locality in America from which museums have been supplied with specimens is Strontian Island, two or three miles from Put-in-Bay Island, in the western end of Lake Erie. But just as this supply was becoming exhausted, a remarkable fissure was discovered last winter on Put-in-Bay Island, which is completely surrounded with very large crystals of this beautiful mineral. The fissure was penetrated in digging a well seventeen feet below the surface, and is large enough to permit the entrance of ten or twelve people at a time. It is not an ordinary cavern, but apparently is the interior of an immense "geode" lined with crystals of this mineral.

The social and recreative features of the meeting were well arranged and of great interest and profit. Wednesday was Salem Day. The scientists took the train or steamer to Salem and were the guests of the Essex Institute. Here the local committee served the party with an old-fashioned New England shore dinner, after which the ancient landmarks of this historic city were visited. On Friday Harvard University did the honors for the visiting scientists, and gave the members of the American Association every opportunity for looking over the treasures contained in the University libraries and museums, as well as for familiarizing themselves by first-hand inspection with the methods and facilities for work in all the various departments of the institution.

On Saturday, August 27th, after five days of work and pleasure, the American Association for the Advancement of Science closed the sessions of its convention. The convention itself has been highly successful as well as important. Papers read have been of exceptional value, and many discoveries of interest to the scientific world have been brought to light. In many cases these discoveries have been the result of years of patient research. Equally important are the suggestions that have been made, and the fruit of them will be seen at next year's meeting at Columbus, O., where the Association will meet. Professor Edward Orton, State Geologist of Ohio, was selected as President for 1899.

During the Association week, and the days immediately preceding, a number of affiliated societies met in Boston, including the American Forestry Association, the Geological Society of America, the American Chemical Society, the Association of Economic Entomologists, the Society for the Promotion of Engineering Education, the Society for the Promotion of Agricultural Science, the American Mathematical Society, the National Geographic Society, the American Folk Lore Society, the Botanical Society of America, and several other important bodies.

THIRD INTERNATIONAL CONGRESS OF APPLIED CHEMISTRY.

The Third International Congress of Applied Chemistry met in Vienna July 27–August 2, 1898. After the various addresses by the President of the Congress, Honorary President of the Organization Committee and others, and the election of the Honorary President and Vice-presidents of the Congress, Professor Buchner gave his address on Fermentation without Yeast Cells. For the information of this Congress we are indebted to the *Chemiker Zeitung* (August numbers) and *Brit. and Col. Drug.*, August 19, 1898. Büchner previously published his work in the early part of the present year on alcoholic fermentation. He obtained a liquor, called zymase, from yeast cells, which is capable of starting the alcoholic fermentation of sugar. So that he has here the product of a living organism, and not the organism that is the cause of fermentation. The labors of Büchner would tend to re-establish the now discarded theory of Liebig, that fermentation is a purely chemical process. This zymase is only obtained on subjecting yeast cells to a hydraulic pressure of more than 500 atmospheres, and then it is as an expressed liquor containing this fermenting substance. In concluding his admirable address the speaker said "it must be left to the future to define the exact boundary between living plasma and a fermentive substance, between the highest representatives of inorganic nature and the most rudimentary and elementary form of organic life."

Dr. Lilienfeld has produced, artificially, peptone, a compound which has hitherto been supposed could only be produced by organic life. It is produced by means of the condensation of phenol and amido-acetic acid with the oxychloride of phosphorous. The author prepared at the convention the artificial albumen and demonstrated, so far as chemical tests could prove, their identity.

In the Pharmaceutical Section, Kremel, of Vienna, delivered an address upon the subject, "That drugs of a powerfully active nature should not only in different countries be prepared from the same formulæ, but that the accurate quantity of the active principles contained in the same should be determined in all countries by one and the same method." After a discussion the following resolution, which was carried, was presented by Kremel, viz.: "The members of Section II (Pharmacy) of the International Congress for Applied Chemistry, are of the opinion that it is a question of urgent necessity that the powerfully operating preparations of all pharmacopœias should contain a uniform quantity of the active principles, and that this uniformity should be attained by the employment of identical methods of preparation." As a general rule, they recommend for extracts, tinctures and drugs the use of such testing formulæ as are based upon the method of agitation and subsequent titration with $\frac{n}{100}$ of acid, as employed by Schweissinger, Sarkow, Beckurts and Keller. For the determination of morphine the method of Welfenberger in its most recent form is recommended.

BRITISH PHARMACEUTICAL CONFERENCE.

The British Pharmaceutical Conference met for the second time in its history, in Ireland, on August 9th, 10th and 11th. The first visit being in Dublin, in 1878, the second in 1898, in Belfast. The Presidential address was given by Charles Symes, and represented a rather comprehensive survey of the numerous problems which have of late years troubled the pharmacists of Great Britain in a greater or lesser degree. We are indebted to the *Pharmaceutical Journal*, August 13, 1898, for the account of this address and the principal scientific papers of which we give abstracts in this issue. Dr. Symes regards education as the first and foremost factor in the general advancement of the craft. Regarding examinations he stated that it was his experience that the majority of men, when just fresh from their examinations, are then only in a position to learn how to expand, apply, and increase their knowledge for the efficient performance of their duties. This does not apply to pharmacy alone; indeed, so much did it apply to the medical student that some few years ago, the curriculum was extended to include one year of practical application of the knowledge possessed before registration, by the Medical Council.

The reminder that pharmacists are directly interested in the operation of many Acts of Parliament that do not concern the ordinary individual is a timely one, for every member of the craft should consider it incumbent upon him to possess an acquaintance with certain provisions of all the statutes mentioned by Dr. Symes and of one or two others. But, unfortunately, too few have even taken the trouble to acquire a definite knowledge of the Pharmacy Acts, and it is not surprising, therefore, that chemists and druggists are

continually finding themselves at a disadvantage because of their ignorance of the exact bearing of some statute or another upon their business. The Poisonous Substances Bill, recently deceased, naturally came under review in the address, Dr. Symes being strongly of opinion that it is impracticable for a Government department "to legislate for matters which really belong to pharmacy." That is a pretty common view in pharmaceutical circles, but in view of the probability of the objectionable measure being resuscitated next session, attention cannot too often be directed to the fact.

The metric system and the difficulties attending its general use were briefly referred to, and pharmacists urged to familiarize themselves with the system, so that they may help to forward its universal adoption. Allusion was also made to the special regulations bearing on the sale of calcium carbide and methylated spirit, the restrictions in connection with the latter being held to be unnecessarily severe and tending to operate in restraint of trade. Synthetic compounds used in medicine and for industrial purposes were then referred to at some length, after which attention was devoted to the new British Pharmacopœia. Dr. Symes reiterated his oft-repeated objection to the constitution of the British Pharmacopœia Committee of the General Medical Council, protesting against the exclusion of pharmacists from that body when the bulk of the work of revision must of necessity be done by pharmacists.

THE BASICITY OF QUININE.

By David Howard and D. Lloyd Howard.

The authors stated that everything points to the conclusion that in the alkaloid each of the nitrogen atoms of the molecule represents a basic nucleus, one of which is much more powerful than the other. This is shown by the action of ethyl or methyl iodide or bromide, which very readily give a monethyl or monomethyl base, and with more difficulty a diethyl or dimethyl base. The formation of quinine salts points to the same conclusion. Sulphuric acid will form three definite crystalline salts; one molecule combining with two molecules of quinine to form the ordinary sulphate of quinine of commerce, with one molecule to form the "soluble sulphate" of commerce; or two molecules of acid will combine with one molecule of quinine to form the little known "tetrasulphate." Similarly the monobasic acids, hydrochloric, hydrobromic, and hydriodic form definite crystalline salts with both one and with two molecules of acid to one of the alkaloid.

Whether the "soluble sulphate" should be regarded as forming a hydric sulphate of the stronger basic nucleus or a neutral sulphate of the "diammonium" must be a matter of opinion; but the tetrasulphate and the acid halogen salts can hardly be regarded otherwise than as the hydric sulphate or the haloid salt of the fully saturated base.

The French chemists have always consistently regarded the "soluble sulphate" as the "neutral sulphate" and the sulphate of commerce as the "disulphate," and similarly they speak of the soluble hydrochlorate as the "neutral" salt and the ordinary hydrochlorate as "basic."

The nomenclature frequently leads to confusion. A disulphate is supposed to be identical with a bisulphate instead of being a basic sulphate, and the exact opposite of a bisulphate.

With litmus as an indicator the point of the formation of the older official

salts is very well defined, the reaction is almost as well marked as in the case of the formation of the neutral salt of an alkali, and thus as far as indicators go, the sulphate of quinine of the British, American, German, and most other Pharmacopœias is undoubtedly a neutral salt. No indicator appears to show the formation of the soluble salt with any degree of certainty.

The effect of sulphuric acid in increasing the specific rotation of polarized light by solutions of quinine, also point to a marked difference in the constitution of the different sulphates. From the labors of Hesse the maximum rotation is not reached immediately on the addition of the excess of acid, but only after a lapse of some time, pointing to a slow formation of the tetrasulphate in the comparatively dilute solutions used.

Whatever theoretic conclusions we may form as to the composition of the salts of quinine, there is no doubt of the convenience of the nomenclature adopted by the British, German, American, Dutch, and most other Pharmacopœias, which regards the familiar sulphate as neutral and the soluble sulphate as a bisulphate, but in foreign commerce we must always be on our guard against confusion arising from the French nomenclature, to guard against which the Italian Pharmacopœia gives us the following remarkable trio of synonyms: Bisolfato de chinino = solfato acido de chinino = solphato neutro de chinino.

NOTES ON FERRUM REDACTUM, P.B., 1898.

By E. Saville Peck.

The author examined some fifteen samples collected from different sources—wholesale houses, pharmacists, hospitals and drug stores. From the subjoined table (*B*) it will be seen that, with few exceptions, the more silvery-gray the sample, the more free metallic iron it contained. The brown masses mentioned consisted chiefly of ferric oxide (F_2O_3).

When treated with hydrochloric acid all samples left a variable residue of carbon and $Si\,O_2$. Hydrogen was liberated having an odor of carburetted hydrogen or an olefine. This liberated hydrogen when passed into lead acetate solution gave a black coloration, due to lead sulphate according to the sulphur present.

Nine out of the twelve samples contained arsenic. Five of the samples gave distinctly alkaline reaction. The following table indicates the difference in the results obtained by the copper sulphate (P.B., 1898) and the mercuric chloride (U.S.P., 1890) methods for the estimation of ferrum redactum:

Sample.	Percentage of Iron by Copper Sulphate Method, P.B., 1898.	Percentage of Iron by Mercuric Chloride Method, U.S.A., 1890.	Percentage. Average Difference.
X 1	91·68	85·65	6·18
2	92·06	85·74	
Y 1	60·13	41·19	19·40
2	60·65	41·79	
Z 1	41·91	31·16	10·29
2	41·66	31·82	

It was found that the solution of copper sulphate (as is invariably the case) gave an acid reaction with litmus paper, and it is conceivable that this acid

TABLE B.—QUALITATIVE AND QUANTITATIVE ANALYSIS OF TWELVE SAMPLES OF COMMERCIAL FERRUM REDACTUM.

Sample.	General appearance.	Wt. taken for analysis.	Free Fe found.	Per cent. of do.	Sulphides indicated by smell.	Sulphides indicated by lead acetate paper.	Arsenic.	Insol. matter, such as silica and carbon.	Test with litmus paper.
A	Silvery-grey, slight lustre	·2345	·2080	88·67	Nil	Faint trace	Faint trace	Present	Nil
B	Grey with brown masses	·3575	·2599	72·71	Slight smell	Traces	Traces	"	Faintly alkaline
C	Silvery-grey with brown masses	·2165	·166	76·74	Nil	Traces	Faint traces	"	Nil
D	Grey with brown masses	·2515	·2117	84.18	Nil	Traces	Absent	"	Strongly alkaline
E	Black cakes	·326	·201	61·65	Distinct smell	Traces	Traces	"	Nil
F	Chocolate-black	·3385	·141	41·66	Distinct smell	Traces	Slight traces	"	Nil
G	Silvery-grey with brown masses	·606	·4073	67·22	Distinct smell	Slight trace	Faint traces	"	Nil
H	Black	·142	·1013	71·34	Strong smell	Heavy traces	Faint traces	"	Strongly alkaline
I	Black	·255	·170	66·69	Strong smell	Heavy traces	Faint traces	"	Strongly alkaline
J	Silvery-grey with few masses	·342	·2605	76·16	Nil	Faint trace	Absent	"	Nil
K	Dark grey	·8255	·3939	47·72	Nil	Traces	Faint traces	"	Nil
L	Chocolate-grey	·625	·552	88·33	Nil	Faint traces	Absent	"	Alkaline

formed with the ferrous oxide (FeO) frequently present in black samples, such as Y, ferrous sulphate, and so tended to give a higher reading than the correct one. On the other hand, in the mercuric chloride method, the presence of mercurous chloride may have a deterrent effect upon the oxidizing action of mercuric chloride upon the free iron present, and so tend to lower the reading.

NOTES ON "CONCENTRATED OIL OF LEMON."

By T. H. W. Idris.

According to the author, "concentrated oil of lemon" is a misnomer, as the terpene of the ordinary oil has a flavor and pungency which are peculiar to itself. Some "concentrated soluble essence of lemon" has been found to consist simply of oil of lemon to which alcohol has been added. Other samples contain added lemon-grass oil or citral, or an admixture of ethers with the oils of lime and orange. Such mixtures are of but little value to mineral water manufacturers, but "terpeneless" oils are of decided utility. Those oils differ considerably, however, and the author of this paper shows how the aldehydes in oil of lemon can be separated without much change and in a state of comparative purity by fractional distillation under reduced pressure. After distilling off about 90 per cent. below 100° C., an oily liquid is left, which deposits a white sediment on cooling. By passing steam through this residue, a pale yellow oil is carried over, which possesses, to a very marked degree, the pure lemon aroma and is very different from citral.

THE GALENICAL PHARMACY OF THE 1898 PHARMACOPŒIA.

By F. C. J. Bird.

The author gives a cursory glance at the more important classes of galenicals of the new B.P., and indicates the direction in which they have been affected by official alterations. The paper is an extremely useful contribution to the literature of the subject of which it treats, and seeks to elicit the experience and views of other workers from the practical retail pharmacist's standpoint, and will serve as an excellent introduction to the general discussion of the new British Pharmacopœia. Under *extracts* Mr. Bird states that the new and altered extracts are, on the whole, a greatly improved class of preparations. Marked improvements are noted in the following liquid extracts: Cascara sagrada, Belladonna, Glycyrrhiza, etc. The more frequent instruction to "evaporate to dryness," and the introduction of extracts reduced to powder with sugar of milk, is noted as a distinct advance in the direction of uniformity, for, in these cases, the operator is now relieved of all doubt as to the meaning of such indefinite expressions as "suitable consistence," "consistence for forming pills," "soft extract," etc., which were of common occurrence in the last Pharmacopœia.

The insertion of liquors marks a change in the official attitude which, by many, has long been regarded as inevitable, for they are introduced as the result of many experiments made with the object of preparing decoctions and infusions in a highly concentrated state, which should resemble the liquids termed by manufacturers "concentrated infusions and decoctions." The methods given for the preparation of these liquors, although perhaps not so perfect as those followed commercially in the manufacture of concentrated in

fusions, are, on the whole, successful, the Liquors Sarsæ Co., Senegæ and Quassiæ being amongst the best.

The process for Spiritus Ætheris Co. involves the distillation of a mixture of alcohol and sulphuric acid at a high temperature, which few pharmacists are in a position to do without risk. In making Spiritus Ætheris Nitrosi, the deficiency of product, due to the loss of nitrous ether in the old process, is now avoided by placing a portion of the alcohol in the receiver to absorb any ethereal vapor which may have escaped condensation.

Mr. Bird does not share the regret with which the disappearance of proof spirit has been viewed in some quarters. He says so long as the word "proof" remained on the official page, there was always an inducement to use it as a standard of alcoholic strength, but its removal has cleared the way for the more rational, scientific and infinitely more convenient centesimal system now happily adopted. Long custom and daily contact with the proof standard have rendered it indispensable to the British Excise, but for pharmaceutical purposes the new method of expressing alcoholic strength has all those advantages over the old, which metric weights possess when compared with avoirdupois weights. Keen disappointment has been felt at the absence of Syr. Ferri Phosph. Co. and Syr. Hypophosph. Co. These two syrups are manufactured in enormous quantities, but as all makers do not follow the B.P.C. Formulary, there is great variation, and authoritative processes for their preparation were eminently desirable.

The new and altered formulæ of the tinctures have, from a laboratory-point of view, proved in most cases entirely satisfactory. The objection that has been raised to the use of fresh peel in making Tinctura Aurantii, viz.: that it can only be obtained at a certain season of the year can hardly have much weight when it is remembered that many other official drugs (poppy petals, green herbs, etc.) labor under the same disadvantage. Among ointments many improvements have been effected. Experience in the use of the paraffin basis, inaugurated in the last Pharmacopœia, has had its effect on the present formulæ, and, generally, they may all be said to be highly satisfactory. The assay processes of the new Pharmacopœia have been found to work well in the analytical laboratory. The one for morphine is now trustworthy and free from error.

GREEN EXTRACTS OF THE PHARMACOPŒIA.

By W. A. H. Naylor and John J. Bryant.

The authors give the following process of assay of the green extracts of belladonna and hyoscyamus: From 2–5 grammes of the extract is weighed into a wide-mouth flask (as an Erlenmeyer), 25 c.c. of 90 per cent. alcohol is added, and the flask with its contents heated on a water-bath under an inverted condenser or other arrangement that prevents loss of alcohol and provides facilities for exhaustion. This operation is twice repeated with two more quantities of 25 c.c. of 90 per cent. alcohol. After each operation the alcoholic solution in the flask is allowed to become cold, and filtered, and the filtrates are united.

To make sure that extraction of the alkaloidal content is complete, the residue in the flask is warmed with a 5 per cent. solution of hydrochloric acid and filtered. The filtrate is then tested with solution of iodine in potassium iodide. Three extractions with alcohol are sufficient for the purpose.

To the alcoholic solution of the alkaloid an equal volume (75 c.c.) of a 5 per cent. solution of the hydrochloric acid of the Pharmacopœia is added, and the mixture shaken up three times successively with 15 c.c. chloroform. After separation and rejection of the chloroformic liquids, the acid solution is rendered distinctly alkaline by the addition of solution of ammonium hydroxide and again shaken up three times successively with 10 c.c. chloroform. The chloroformic solutions, after withdrawal, are mixed and evaporated, and the residue dried over a water-bath until it ceases to lose weight. The dry alkaloidal residue is titrated, as the Pharmacopœia directs in the final stage of the process for determining the proportion of alkaloid as given under Extractum Belladonnæ Liquidum.

The chloroformic separations take place quicker and cleaner than is the case in the Pharmacopœia process for liquid extract of belladonna.

It may be noted that the difference between the amount of alkaloid obtained by weighing and that indicated by subsequent titration is less than 0·01 gram me

The authors suggest that the strength of extract of belladonna should be fixed at 1 per cent., and that of extract of hyoscyamus at 0·2 per cent.

GLUTEN FLOUR.

VICTOR G. L. FELDEN.

A sample of so-called gluten flour, having been found to contain abundance of starch and but a small amount of gluten, the author subjected five commercial samples to detailed examination. With one exception, all but one proved to contain a large proportion of gluten, ranging from 60 to 76 per cent. The fifth sample—of American origin—contained 8·5 per cent. only. As regards starch and sugar, the four samples rich in gluten yielded from 7·6 to 16·7 per cent., whilst the one containing little gluten consisted of starch and sugar to the extent of 68·8 per cent., so that diabetic patients would gain little by using it instead of good wheaten flour. Since the proportion of gluten in flour is readily determined by simply washing a sample in a muslin bag and drying, the author suggests that all chemists who sell gluten flour should occasionally test their stock.

THE CHARACTERS AND METHODS OF ASSAY OF THE OFFICIAL HYPOPHOSPHITES.

BY H. A. D. JOWETT.

In the proposed methods of assay previously given, no author apparently made analyses of pure material and of mixtures containing a known quantity of impurity. Tyrer had previously taken into consideration that phosphite will behave in a similar manner to oxydizing agents as the hypophosphite. In the method suggested by Jowett the impurities are first removed by the addition of lead acetate, the excess of lead is then removed by hydrogen sulphide, and the hypophosphite contained in the filtrate completely oxidized to phosphate, which is then determined either gravimetrically or volumetrically. The author suggests a thorough revision of official tests for hypophosphites and the need of fixing standards of purity for the same—for the calcium and barium salts, 98 per cent.; for the sodium and potassium salts, 96 per cent.; for the ferric salt, 95 per cent.

SOME COMMERCIAL VARIETIES OF DILL FRUITS AND THEIR ESSENTIAL OILS.

By JOHN C. UMNEY.

The dill fruits obtained from different countries by J. C. Umney do not show such marked difference in appearance as the fennel fruits from different parts of the world, but the differences are probably of greater medicinal importance. English, Indian, German and Japanese dill fruits are described, and analytical data given concerning their oils. The use of English or German fruits is recommended for the preparation of dill water, and preference for pharmaceutical purposes is given to the oils of the same varieties.

NOTES ON EXTRACT OF GINGER.

By T. H. W. IDRIS.

It is well known that alcoholic extract of ginger, commercially known as "gingerine," does not contain all the aromatic principles of the root, as most of the essential oil is carried over with the recovered alcohol.

In the course of experiments to produce extract of ginger that would contain the whole of the flavoring and odorous principle, it was found that acetone was the most suitable solvent, boiling as it does at 56° C. and being miscible with water in all proportions. The apparatus used consists of a modification of a Soxhlet on a manufacturing scale. If some powdered ginger be exhausted in a Soxhlet with acetone, and afterwards with alcohol, we find that the whole of the aromatic and pungent principles have been removed by the acetone, showing that it compares favorably with alcohol as a solvent. The acetone extract does not appear to have lost any of its volatile oil in the process of recovery, as is so markedly the case when using alcohol, while the last trace of acetone is easily removed by agitation with a little water. This acetone extract is a dark-brown substance of a treacly consistency, intensely pungent and at the same time possessing a full ginger aroma, the quality of which largely depends on the variety of ginger used.

It is readily soluble in alcohol, forming a deep-brown liquid. If steam be passed through the extract and then condensed, it carries over a quantity of the volatile oil with it. This oil floats on the surface of the condensed water, forming a yellow layer, and can be easily removed. The difference in aroma of the various kinds of ginger, though noticeable enough when examining the rhizome, is much more apparent when dealing with the oils themselves, and in this way a method of distinguishing the variety of ginger used is obtained. The various tinctures and essences of ginger may be very conveniently and readily prepared from this extract without the usual loss of alcohol, and syrup may be flavored with it by proper diffusion at a suitable temperature without the use of any spirit, and a further saving may be thus effected in manufacturing ginger-flavored beverages.

AMOUNT OF CARBONIC DIOXIDE AVAILABLE IN THE OFFICIAL GRANULAR EFFERVESCENT PREPARATIONS.

By C. S. DYER.

The only practical method of determining the amount of gas was to measure the carbon dioxide volumetrically. The apparatus used was an ordinary Lunge

nitrometer with the urea determination arrangement attached. The nitrometer was filled with water, and to avoid absorption of CO_2, a little benzene was floated on the surface in the measuring tube, the resulting presence of the mixed benzene and aqueous vapor caused the amount of gas evolved to exceed the theoretical yield by about 10 per cent., so eventually mercury was employed.

The different samples were moistened with an equal quantity (2 c.c.) of water. This would, at same temperature and pressure, absorb the same amount of gas, which would not exceed 2 c.c.

Several specimens of commercial sodium bicarbonate were first tried, and were found to give almost identical results, all showing almost exactly the theoretical amount of CO_2.

Then to ascertain whether the loss of gas on granulating is due to the heating of the bicarbonate, *per se*, the same samples were exposed to a temperature of 100°–105° C. for ten minutes; that is, under the same conditions so far as heat is concerned as in the process of granulation. The resulting loss in weight amounted to about 2 per cent.; this is apparently water, the same quantity of gas being evolved.

The ingredients of the P. B. Sodii Citro-Tart. effervescens were then carefully weighed out and well mixed.

(1) Part of this mixture was immediately tested for quantity of CO_2.

(2) Part was dried below 54° C. without granulating (for comparison with No. 3), to see how much loss the necessary high temperature caused, and

(3) The rest was passed through the P. B. process, granulated and dried.

The two latter parts both lost about 10 per cent. in weight as the P. B. states, but that portion not heated much showed a higher percentage of gas available.

Citric acid loses nearly 9 per cent. of its weight in water of crystallization, and the amount present of citric acid is only 16 per cent. The other ingredients only lose about 2 per cent. in weight on treating. This loss is accounted for by the following:

Sodium bicarbonate, on combining with an acid, of course, produces CO_2 and H_2O, which is lost on drying. This amounts to 62 per cent. of the weight taken, and as the quantity present is about 46 per cent., the total possible loss in this way would be

$$\frac{46 \times 62}{100} = 28{\cdot}5 \text{ per cent.}$$

The observed decrease in weight is about one-third of this, roughly indicating that about 30 per cent. of sodium bicarbonate and acid has combined during the process. To see how far this is actually the case, the following figures will show.

Use mercury in the nitrometer; if using water, place a little benzine on surface, and remember the results will be 10 per cent. higher.

The Pharmacopœia ought, among the characters and tests of those preparations, to state the least amount of CO_2 which each should yield on the above treatment. Any sample which does not show, say, 50 per cent. of its bicarbonate available for producing effervescence, should not find its place in modern pharmacy.

Substance Experimented On.	Quantity Used.	No. of C.c. of CO_2 evolved at N. T. and P.
1. Sodium bicarbonate	·15 gramme ·15 gramme	41·6 C.c. 41·8
2. Ingredients of P.B. eff. citrotartrate immediately after mixing . . . . . =	·3 gramme (46 p c. $NaHCO_3$)	39·24 C.c., slight loss.
3. Ditto dried below 54° C , not granulated	·3 gramme	33 C.c. = 21 p. c. loss gas.
P.B process carried through	·3 gramme	27 C.c. = 32 p. c. loss gas.
5. Good commercial sample by well-known maker	·3 gramme	26 8 " " "
6. P.B. Eff. Sodii Sulphas	·3 gramme	21·8.
7. P.B. Mag. Sulph. Eff	·3 gramme (contains only 36 p. c. soda)	15 C.c.
8. Sample of Mag. Cit , commercial . . .	·3 gramme	15 C.c.

No. 2 shows a slight loss, the powder being very damp.

No. 3 shows nearly as much loss as in the final operations.

No. 4, 32 per cent. loss; this agrees with the loss in weight mentioned before.

No. 6, a comparatively old sample.

No. 7, this preparation contains only 36 per cent. of soda, against 50 per cent. of No. 6; the relative yield is therefore the same.

No. 8 contains about 33 per cent. sodium bicarbonate; result fair.

NOTE ON THE MYDRIATIC ALKALOIDS.

By H. A. D. Jowett.

The descriptions and tests of mydriatic alkaloids given in the new Pharmacopœia are considered by H. A. D. Jowett to be generally unsatisfactory, and, in some cases, misleading and inaccurate. In the case of atropine and its salts, he thinks the insertion of the color test with fuming nitric acid and potash is quite unnecessary, and he suggests that to ensure pure products, such as might reasonably be expected from manufacturers, reference should be made to the melting point, formation and melting point of the aurichloride, optical inactivity, and freedom from ash on ignition. It is suggested that the melting point of hyoscyamine should not be lower than 200°, that scopolamine or hyoscine hydrobromide should have its solubility given as 1 in 4 rather than 1 in 1, and that the melting point given for the dehydrated salt should also be modified.

A NEW CONSTITUENT OF LEMON OIL.

By J. C. Umney and B. S. Swinton.

In examining lemon oil the authors have separated an ester of geraniol, and they consider that the presence of this compound has an important bearing upon the odor and taste of lemon oil, and that a concentrated lemon oil must contain the ester in normal proportions, in addition to citral and citronellal, before it can be said to represent in a concentrated form the true odor and taste of the natural oil.

ALBUMINS AND SOME TYPES OF PROTEID DIGESTION.

By Gordon Sharp.

As the result of an examination of hard boiled egg-albumin and dried serum-albumin, the author arrives at the conclusion that peptone is absent from both.

Egg-albumin is said to yield unaltered albumin, alkali albumin, proto-albumose, a little hetero-albumose, and some crystalline matter of an alkaloidal nature; serum-albumin differs in yielding more hetero-albumose, together with a little deutero-albumose. Papain was found to digest serum-albumin much more readily than egg-albumin, yielding traces of proto and hetero-albumose, abundance of deutero-albumose, but no peptone. With pepsin, in both cases, the digestive process was carried further, traces of true peptone being found. In the presence of yeast, as in the maturing of koumyss, the albumin of the milk is partly changed into the higher proteids, but the peptone stage is never reached.

NOTE ON OIL OF EUCALYPTUS.

By E. J. Parry.

The author has made an examination of the oil obtained from the leaves of *Eucalyptus toxophleba* of Western Australia.

The oil has a most obnoxious and uninviting odor, and when inhaled induces violent coughing. Its specific gravity at $\frac{15.5°}{15.5°}$ is .8288. It is faintly dextrorotary, about .5° for 100 Mm. On fractionation it yielded the following results. It began to boil at 160°, rising rapidly to 168°. The fractions collected were :—

168°–171°	68 per cent.
171°–176°	14 " "
176°–182°	2 " "
182°–187°	8 " "
Residue	8 " "

With phosphoric acid the oil simply became syrupy. The first fraction was almost free from cineol, whereas the 8 per cent. distilling between 176°–182° was almost entirely cineol. A determination of this body in the fractions, which was necessarily only approximate, showed that the oil contains only about 15 per cent., certainly not more than 20 per cent., of cineol. Whilst phellandrene was present, as identified by its nitrite, it did not form anything like the remaining 80 per cent. of the oil; he was unable to search for any other bodies except aldehydes and ketones, the presence of which was indicated by an absorption by sodium bisulphite of about 10 per cent.; and for amyl alcohol, which has been identified in traces in some specimens of oil of *Eucalyptus globulus*. He was unable to find any trace of this body, however.

A QUICK POLARIMETRIC METHOD FOR THE DETERMINATION OF STROPHANTHIN IN THE B. P. EXTRACT AND TINCTURE.

By Edwin Dowzard.

The following method will be found useful as a means of approximately determining the amount of strophanthin in the P.B. tincture and extract :—

100 c.c. of tincture is evaporated down to about 20 c.c. on a water bath, 2 c.c. of a solution of basic acetate of lead then added, the mixture heated for a few minutes, and filtered, the precipitate being washed twice with warm water. The filtrate and washings are evaporated to about 10 c.c. and made up to exactly 20 c.c. with water, a portion of which is passed through a dry filter. The optical rotation of the filtrate is then taken in a 200 Mm. tube, using an instrument of the Laurent half-shadow type.

One minute is equivalent to ·03 gramme strophanthin per 100 c.c. of the liquid examined.

Example :—

100 c.c. of the 1885 tincture were treated as above ; the rotation equalled + 0°30′. $\therefore \frac{0{\cdot}03 \times 30}{5} = 0{\cdot}18$ gramme strophanthin in 100 c.c. tincture.

It is necessary, of course, to divide the rotation by five, as the liquid is five times stronger than the original tincture.

In the case of the extract, the determination must be made before the reduction with milk sugar.

One gramme of extract is dissolved in 5 c.c. warm water. 2 c.c. solution of basic acetate of lead are then added, the mixture heated for a few minutes and filtered, the precipitate is washed with warm water until the filtrate and washings measure 20 c.c. The rotation is then observed, and the amount of strophanthin calculated therefrom as in the tincture.

ALGINOID IRON AND SOME OTHER ALGINOIDS.

By E. C. C. Stanford.

The property of passing through the stomach unchanged is possessed by few if any medicines, hence where this is desired, it is usually necessary to cover the medicament with such a body as keratin, on which the stomach has no action. A complete series of therapeutic compounds having this general property would be new to medicine, would probably give rise to new developments, and add considerably to the physicians' weapons for attacking disease. Such a series appear to be presented in the alginates. As far as has been ascertained, alginic acid and its insoluble medicinal salts, iron, zinc, mercury, bismuth, lead, silver, antimony, arsenic, etc., are unacted on by the gastric digestion, and pass the stomach unchanged. Hence the action of these metals may be expected to present some differences or variations of the ordinary effects when presented in this form, and for a distinctive and expressive name the author calls these "Alginoids."

The chemical formula of alginic acid is represented as $C_{76}H_{80}N_2O_{22}$ (*Jour. Soc. Chem. Ind.*, 1886, p. 218). It is a strong acid evolving carbonic acid from the alkaline carbonates in the cold ; however, it is assimilated and it is known to be a nutritious food. The soluble alginates are those of the alkaline metals and of magnesium. The insoluble salts are of the other alkaline earths and of the heavy metals.

Alginoid Iron or Ferric Alginate.—Ferrous salts are not precipitated by sodium alginate, the ferric salt is obtained by decomposing ferric chloride with sodium alginate, both in solution. A gelatinous brown precipitate is obtained. When dry it forms a tasteless insoluble brown powder, having a composition leading to the formula $C_{76}N_{77}Fe_3N_2O_{22}$. It contains 10·97 per cent. of Fe.

It is soluble in ammonia, forming a deep reddish-brown solution, which, on evaporation, becomes insoluble in water, so that the alginoid iron can be administered in a liquid form.

The dry powder has, however, been mostly administered, and in all cases of anæmia and chlorosis, even where gastric ulceration was present, it has been well borne, and showed a sedative action by arresting vomiting and sickness.

It can be employed therefore, when other preparations of iron would not be tolerated. Being quite tasteless, it is readily taken by children. It has no astringent effect on the bowels, and does not produce constipation ; on the contrary, the effects are slightly laxative. It is given in doses from 2 to 15 grains. Some physicians have found the former dose quite effective.

Other alginoids, as of bismuth, mercury, arsenic, magnesia and of the alkaloids were referred to. The therapeutic trials of these are not complete.

A SHORT NOTE ON LIME WATER.

By E. T. Evans.

From the experiments of the author it would seem that lime water can be made in a few minutes, if a fairly pure caustic lime be recently slaked before using. Also that when intended to be kept, the lime water should be in contact with the excess of lime used.

THE CHEMISTRY OF THE 1898 BRITISH PHARMACOPŒIA.

By P. Kelly.

Changes in atomic and molecular weights, the introduction into the Pharmacopœia of structural and constitutional formulæ, alterations in nomenclature, modifications of tests, and the standardization of preparations of potent drugs, are referred to in this paper. The author states that, in his opinion, the 1898 British Pharmacopœia is an improvement on its predecessors, especially as regards its chemistry.

THE GALENICALS OF THE NEW PHARMACOPŒIA.

By H. Wippell Gadd.

The author considers that the New Pharmacopœia is in advance of the previous ones, the weakest point being the processes, and he adds, "one wonders if, in some future book, when pharmacy approximates more closely to an exact science, and the present tendency towards factory-made preparations has advanced still further, the galenicals may be treated as the chemicals are now, processes being omitted and tests extended."

A NOTE ON THE BOTANICAL NOMENCLATURE OF THE BRITISH PHARMACOPŒIA.

By G. C. Druce.

The author states that the changes in botanical nomenclature of the new Pharmacopœia are almost all made in the right direction, and points out some cases where the law of priority was not adhered to.

THYROGLANDIN.

By E. C. C. Standford.

The author claims that Thyroglandin represents the activity of the raw thyroid gland of the sheep, without its disadvantages and dangers, and that it contains the active principles in the form and proportion in which they exist in the raw gland.

KIESELGUHR AND OTHER INFUSORIAL EARTHS.

By John Moss.

The author gives a valuable essay on the origin, composition and uses of infusorial earths. He suggests the employment of diatomite as a diluent for hygroscopic powders, such as euonymin when made by the late Pharmacopœia process. It may also be employed for binding together drugs that compress with difficulty.

PHARMACISTS AND THE PHARMACOPŒIA.

By Peter MacEwan.

The British Pharmaceutical Conference should, in the author's opinion, take upon itself the task of revising the Pharmacopœia. He would have the Formulary Committee reorganized so that it should be representative (1) of the more important centres in the three kingdoms, preferably through local pharmaceutical associations; (2) of the Pharmaceutical Societies of Great Britain and Ireland; and (3) of every pharmaceutical association and society of interest in Canada, India, and the Colonies. This Grand Committee should appoint a smaller working committee, which should secure the co-operation of the Pharmaceutical Research Laboratory, and of any similar institution at home and abroad. Pharmacists would thus take the lead in the matter of Pharmacopœia revision, and might stipulate for more satisfactory conditions than now prevail when asked by the General Medical Council for assistance.

MATERIA MEDICA ANIMALIS.

By J. C. McWalter.

The author has given a concise and succinct account of the present state of our knowledge on the following animal extracts: succus testibus paratus; sperminum; cerebrum exsiccatum pulv.; cerebrum siccatum; glandulæ suprarenales siccatæ pulvis; hypophysis cerebri siccat. pulv.; medulla ossium rubra; ovaria siccata; renes siccata; thymus siccatus; prostata siccata pulv.; thyroidinum siccatum; hepar; lien preparatus; lien; mammæ; pulmones; glandulæ bronchiales; extractum corporis ciliaris; glandula parotis.

ON THE SALIENT FEATURES OF THE IRISH FLORA.

By G. C. Druce.

The species of flowering plants are relatively fewer in number in Ireland than in England, and, to a certain extent, Ireland is deficient in large, bright colored flowers, such as are found in the Compositæ, Labiatæ and Leguminosæ. There is also a great falling off of Germanic types in Ireland, and the Scandinavian types are only about one-third as many as in England.

A Delicate Reaction for Tannin is said to consist of a solution of 1 part of sodium tungstate with 2 parts of sodium acetate in 10 parts of water. A straw yellow precipitate is produced with this reagent in a tannin solution.

Pilocarpus Finnatifolius grown in the Botanical Gardens of Palermo, yielded according to Gaylio (*Apoll. Zeit.*, 1898, 130) as much as 0·62 per mille of pilocarpine nitrate. It is suggested that the cultivation of Pilocarpus in Sicily might prove to be a paying industry.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The forty-sixth annual meeting of the American Pharmaceutical Association was held in Baltimore from August 29th to September 3d. This is the fourth time in the history of the Association that it has met in this charming city. The first meeting in Baltimore was held September 9, 1856; the second September 8, 1863; the third on September 13, 1870. At the fourth meeting the council met at 11 A.M., on Monday, August 22d. The names of sixty-two applicants were proposed for membership, and Dr. Frederick Hoffmann, of Germany, and Mr. William Martindale, of London, were elected honorary members. Reports of various committees were made, and it was announced that twenty-three of the members of the Association had died during the year, the oldest being A. B. Taylor, of Philadelphia, and the youngest Walter T. Sellers, who perished on the ill-fated United States Ship "Maine."

The first general meeting of the Association was held at 3 P.M. A large number of members, delegates and friends of the Association were present.

After President Whitney had called the meeting to order with introductory remarks, Mr. H. P. Hynson, Chairman of the Local Committee, told of the efforts of the committee to make the occasion one of great pleasure, spoke in flattering terms of the assistance rendered by each member of the committee, and introduced Mayor W. T. Malster. The latter was greeted with generous applause, and made a very clever address, it being considered one of the interesting events of the afternoon. He was accorded much attention, and received cordial applause for his generous welcome to the Monumental City, and his interest in and appreciation of the efforts of the Association, the members of which he was welcoming to Baltimore.

Following Mayor Malster, Dr. A. J. Corning made some appropriate remarks. The President then said he thought it would be interesting to hear from representatives of the various sections of the country. S. A. D. Sheppard, of Boston, spoke of the North; Dr. G. F. Paine, of Atlanta, Ga., for the South; and Mr. William Mittelbach, of Missouri, for the West. Professor Joseph P. Remington, of Philadelphia, who was also called upon for a speech, caused a wave of patriotism to pass over the hall when he said: "As I heard our President call on members to speak for the North, the South, the East and the West, this thought struck me: I wish he would call on some one to speak for America, for we're all one now. Since that splendid victory achieved by Dewey in the Bay of Manila, this country has known no section. We are all one—we are all for America."

Calling on the Second Vice-President of the Association, Mr. Wm. S. Thompson, to take the chair, the President then read his address, which was quite a lengthy one. He said in part:

I know of no way by which, in fewer words, I can convey to you my estimation and appreciation of the value of this Association, than by quoting in part the description of a painting that may be seen at the Providence Athenæum. It is a small painting on ivory by Malbone, of exquisite delicacy and beauty, called, "The Hours," representing the Past, Present and Future.

"The artist has depicted the 'Hours' as three lovely maidens: the Present standing in the brightness of the foreground, is beautiful in the consciousness of the pleasure of the hour, and the untried vigor of her youth. The Future is following close behind her sister, and the joyousness of anticipation is shown in every feature, with no shadow of disappointment to the brightness; but the Past, although no less lovely than her sisters, leaving all behind, is retreat-

ing regretfully and lazily into the shadow, but seems to linger for a moment, while the light of the Present falls upon her."

Thus, it seems to me, it is with this Association. The past, present and future of the A.Ph.A. will give to the coming artist—a painter or writer—an ideal of unselfish work, scientific research, helpful, social and educational progress.

As one of the less than fifty living members prior to 1860, and, therefore, properly classed as of the past, I unhesitatingly declare that this Association has been, is, and will continue to be, one of the leading educational, guiding and helpful organizations, of special value to its members, and of unparalleled service to humanity.

It was my privilege, soon after my return from the Minnetonka meeting, to attend the one hundredth anniversary of the famous old frigate *Constitution*, launched from Boston in 1797 saved from the junk shop by Dr. Holmes' poem, "Old Ironsides," and now "resting upon the waters into which she rushed as she left the builder's ways a hundred years ago."

As I listened to the thrilling history and glorious achievements of this noble old ship, the courage, skill and wisdom of her brave commanders, Hull, Bainbridge and Stewart, my thoughts wandered to the craft of the A.Ph.A., and I saw in misty form the faces of Maisch, Procter, Parrish, Taylor, Squibb, and others of our early crew; and recalled the services and loyal contests our ship and crew have had in creating colleges of pharmacy, battling successfully against ignorance and duplicity, establishing boards of pharmacy to enforce and increase educational work and check any possible piratical craft, like the quiz book and cut-rate personal cramming. We have many instances in Massachusetts of these ways that are dark, even to the taking of an examination by an expert for the would-be pharmacist, for which offence each man paid the penalty of six months' service in the House of Correction.

The A.Ph.A. has no better "feeder" to draw from, than the State Associations, and it is a personal satisfaction to note the loyalty of our members to this branch of our work. If any have failed to appreciate the service rendered and the possibilities, I would suggest the careful reading of the several State Proceedings. Time forbids the allusion to more than one, and that one, the Pennsylvania Pharmaceutical Association. I refer particularly to their Proceedings of 1895, sent me by one of its members. I make brief quotations. Professor Remington, discussing associations and organizations, said: "There is a need in this country for an organization of a totally different kind. There is a need for the retail druggists to get together and form an organization, in which they will not admit the wholesaler, the professor in the college of pharmacy, or any school, or connected with an educational institution, or the proprietor of a remedy; but a retail druggists' association, pure and simple, which shall be controlled by the retail druggists of this country. There is a need for it"

The writer of a paper uses these words: "The manufacturers are the managers of the incubator where the cutter is hatched."

I cannot resist the temptation to quote briefly from a paper read by our Mr. Patton, of York. He says: "Thus the queer anomaly presented by reversing the order of therapeutics by fitting the disease to the remedy, instead of the medicine to the disease. The enterprise of the manufacturer does not stop here. We observe a tendency to eliminate the physician also, for we do not find treatment and dosage, with other information conducive to self medication plainly printed on their packages. A resolution unanimously adopted by the Pennsylvania Medical Society at their last meeting called upon the manufacturers to cease this reprehensible practice. It will cease, or otherwise, according to the commercial aspect of the question from the manufacturer's point of view. Having by the aid of the physician introduced their products to the consumer, they would now instruct the latter to do without the services of the former, a case of base ingratitude. If the foregoing statement is open to question, there is no question about the present tendency on the part of the pharmacist to take care of himself. He has awakened to the fact that between the upper and nether mill stone of the cutter and manufacturer, he was being pulverized very fine. As the operation is not a pleasing one, especially to the victim, it behooved him to be up and doing, and endeavor to meet them on their own ground. Lessening business, and diminishing profits cannot go on forever. The limit will be reached in extinction."

An enthusiastic worker in our Association, quoting from a medical journal, says:

"It needs no prophetic eye to see the extinction awaiting the practicing physician, using the term in contradistinction to the hospital or dispensing physician. Surgeons, aside from professors and hospital and dispensary surgeons, are already extinct. The drag net of the ambulance, dispensary, clinic and hospital have secured such a 'corner' in surgery, that no man outside of the chosen few can make a living. What has occurred in surgery is now occurring in medicine. No patient, able to walk or ride to a hospital, need pay a cent for

medicine or treatment, and the weary and struggling outside general practitioner can go home, shut himself up with his emaciated wife and starving children, and turn on the unlighted gas." The Journal of the American Association, referring to the same subject, says: "The doctor as a private physician, working for himself, will more and more find his position disappearing. There will be general practitioners in out-of-the-way places, as there are now; there will be men of rare ability, who will attract by their personality and who will remain individualistic in their work. But the great mass of town physicians may be obliged to adapt themselves to other conditions, and either become salaried employees of State and private institutions, or form mutual and co-operative hospitals and dispensaries, thereby employing themselves; which plan or plans will soonest find adoption, the future alone will tell; but the general physician will probably not remain as he is, and sooner or later will be obliged to choose between the old and the new paths." The writer then adds: "If the prophets are true, and the physician of the future is to exist as part of the great medical institution, the pharmacist will follow suit. . . ."

While I do not agree with the medical journals or physicians quoted, that the future of the average physician is a close room with the unlighted gas turned on, I think we must all agree that those physicians who are too indolent or too ignorant to write for such remedies as each case demands, and who depend upon the printed slips of specialties, tablets or triturates, are certainly approaching a suicidal condition. It is not for us to discuss the future of the physician, but when the writer adds, "the pharmacist will follow suit," we protest. Pharmacy is a science, and we don't propose to abandon our scientific methods by any such unscientific, selfish and cowardly act. We have been trained, and our life depends upon faithful service for the public good; and exposing the public to the hazard of gas explosions is not for the public good.

Feebly, and as briefly as possible, I have presented a few points which seem to me to demand your careful consideration

Fellow-members of the American Pharmaceutical Association: As sure as the sun rises in the east and gives us light, as sure as the North Star has been a guide to the mariner, so sure is it that the American Pharmaceutical Association has been and will continue to be the light and guiding star of the coming pharmacist. Because clouds sometimes obscure the light, or storms and contentions drive us from our course, are we, like the clam, to bury ourselves in the sand? There is a future for pharmacy; there is work for us to do at at the present and in the future as in the past. Our colleges of pharmacy are graduating one thousand or more every year. Lectures by mail, correspondence, and private instructions with special study are enabling boards of pharmacy, so far as I can judge, to register two thousand or more every year. And it is but fair to assume that the average pharmacist of the past three years is a better educated and professional pharmacist than the average pharmacist of ten years ago, hence the educational progress must be an accepted fact. I repeat, there is a future for pharmacy; and the future may be likened to the mining industry. Mines that have been profitably worked and exhausted, as supposed, have, under modern skill and science, been reopened and worked more profitably than before. So pharmacy to-day, in a few places, is testing and experimenting on the lines of assay, analysis, microscopy and bacteriology.

The President's address was received and referred to a Committee consisting of W. S. Thompson, of Washington; S. A. D. Sheppard, of Boston, and H. M. Whelpley, of St. Louis. President Whitney then resumed the chair and Secretary Caspari called for the various standing and special committees. The selection of the Nominating Committee to elect officers for the ensuing year was the next business in order, and a recess of five minutes was granted for the purpose of affording the members for the various States, Territories and Provinces an opportunity to choose their representatives. The following States, etc., were represented: New York, Alabama, Georgia, Maryland, Vermont, Maine, Missouri, Massachusetts, Ohio, Illinois, South Carolina, Iowa, Michigan, Kentucky, Connecticut, New Jersey, Indiana, Pennsylvania, Canada, Virginia, Rhode Island and District of Columbia. These selected their representatives and nominators. In addition the President appointed at large five members. The Nominating Committee decided to meet after the adjournment of the session.

The President then appointed a Committee on Time and Place of next meeting, of which Professor Remington was chairman. The session then adjourned until the following morning. In the evening a reception was given which was opened by a musical programme, rendered by Steinwald's orchestra, which played from the stage of the hall. Chairs and tables were placed conveniently through the hall, and refreshments were served during the rendition of the musical programme. This was followed by informal dancing. The reception was a successful feature of the social portion of the programme.

SECOND GENERAL SESSION.

The second general session was held at 10 A.M. on Tuesday morning, the President in the chair. Secretary Caspari read the minutes of the first general session, which were adopted as read. The minutes of the Council were then read by the Secretary of the Council, Mr. Kennedy. The Nominating Committee reported the following ticket as the choice of the Committee for officers of the Association for the ensuing year:

President—Charles E. Dohme, Baltimore, Md.
First Vice-President—George F. Payne, Atlanta, Ga.
Second Vice-President—James H. Beal, Scio, O.
Third Vice-President—Miss Josie Wanous, Minneapolis, Minn.
Treasurer—S. A. D. Sheppard, Boston, Mass.
General Secretary—Charles Caspari, Jr., Baltimore, Md.
Reporter on Progress of Pharmacy—C. Lewis Diehl, Louisville, Ky.

Members of Council: (*a*) For three years, H. M. Whitney, Charles A. Rapelye and Wm. S. Thompson. (*b*) To fill vacancies caused by two resignations, Thomas F. Main and John Ingalls.

The report was received and the officers elected, the Secretary being instructed to cast an affirmative ballot. Secretary Caspari then announced that he had received the credentials of delegates from a number of State and local Associations, Colleges of Pharmacy, and their Alumni Associations and other bodies. On motion these were received by the Association, and the usual privileges accorded the delegates.

The various Special Committees gave their reports, being as follows: Committee on Transportation, C. A. Mayo; Special Auxiliary Committee on Membership, H. M. Whelpley; Committee on National Formulary, C. Lewis Diehl; Committee on National Department of Health, Jos. P. Remington; Committee on General Prizes, Frank S. Hereth, recommended that the first prize be awarded to Knox and Prescott for the Caffein compound in Kola; the second prize to Dohme and Engelhardt for paper on Chemistry of Cascara Sagrada; the third prize to Henry Kraemer for paper on Examination of Powdered Vegetable Drugs; Committee on Ebert Prize, Albert B. Prescott, reported that this prize be awarded Virgil Coblentz for his paper on Gelsemic Acid; Report of Chairman of Council, having charge of the funds of the Association, Wm. S. Thompson; Committee on Pure Food and Drug Congress, reported by J. H. Redsecker; Committee on Meeting of 1900, Wm. C. Alpers. F. G. Ryan, Chairman of the Special Committee on Weights and Measures, reported the advances made in the use of the metric system in the various parts of the world, and offered a resolution requesting medical colleges in America to teach their students the metric system exclu-

sively, beginning with the college year 1900. This, in the Chairman's mind, being the only practical way of bringing the metric system into general use in medicine and pharmacy.

The Committee on Membership, through Mr. George W. Kennedy, its Secretary, reported that the Association has now 1,306 active or contributing members, 98 life members and 11 honorary members, making a total membership of 1,415.

The report of S. A. D. Sheppard, the Treasurer, showed that the receipts during the year amounted to $9,535.65, and the disbursements aggregated $6,337.64, leaving a balance of $3,198.01 on hand.

The Committee on Time and Place of Next Meeting proposed that the next meeting take place in Put-in-Bay, Ohio, on September 4, 1899.

The report of the Special Committee on National Legislation, of which F. E. Stewart is chairman, had particularly to do with the subject of patents, trade-marks, etc. It stated that during the past year the American Pharmaceutical Association has been especially honored by the National Association of Manufacturers. The chairman of the Committee on Patents of said Association invited the chairman of your Committee on National Legislation to take part in the deliberation of said Committee on Patents. One of the most active and prominent members of that committee is also secretary of the National Association of Inventors and Manufacturers, and both associations are acting in strong accord along similar lines. Three important and influential associations have thus been brought into touch with a common purpose in view, viz., the proper interpretation and partial revision of the United States patent and trade-mark laws. Your committee now reports that by the combined efforts of the three associations referred to, aided also by other influence, the desired object is in the way of being accomplished, for the President of the United States has recently appointed a commission to revise the United States patent and trade-mark laws. This commission consists of Francis Forbes, of New York; Arthur P. Greeley, of New Hampshire (Assistant Commissioner of Patents), and Peter Grosscup, of Illinois.

The importance of clearly defining the problem now before the Association by the appointment of the commission above referred to is very evident. It is time to drop vague terms and loose definitions and call things by their right names. The terms "patent medicine," "proprietary medicine," "secret nostrum," "trade-mark pharmaceutical," etc., will no longer suffice. We must define clearly our premises before we can satisfactorily enter into arguments with our opponents.

The common understanding of the term "patent" medicine is "secret" medicine. The term is a misnomer when thus applied, for a thing patented is a thing divulged.

The common understanding of the term "proprietary" medicine is a medicine whose commonly accepted name is registered as a trade-mark. But, registering such name as a trade-mark does not make it a trade-mark, for a title which the public use to describe the article cannot at the same time perform the function of a brand-mark, to distinguish one make of the article from another make of the same article.

A "secret" medicine is thus defined by the official Medical Board of Saxony: "Secret remedies are all those agents sold for the prevention and cure of diseases of men and animals of which the ingredients, percentage, composition and method of preparation are not made public when first announced for sale. Such information must be complete and exact, in readily comprehensible language, and made known to all desirous of such information."

Taking the above facts into consideration, it is evident that a patented medicine is neither a "patent" medicine nor a "proprietary" medicine, nor a "secret" medicine. The object of the patent law is to promote progress in science and the useful arts. Can it be applied to medical science and the associated arts of pharmacy, pharmaceutical chemistry, and therapy, in a manner to realize this object? Owing to the impossibility of ascertaining the true value of a new introduction to the Materia Medica as a therapeutic agent, except by years of patient investigation by competent observers, working under different circumstances, with opportunities for freely criticising each other's work, untrammeled by commercial consideration, the granting of patents for inventions in the therapeutic art does not seem practical.

The trade-mark law should so read as to make it necessary for every article of commerce, when first introduced, to have a name given it for public use as a part of the common language. It should also require that the common descriptive name of each article advertised

should appear in advertisements equally prominent with its brand-name, so that the latter may be used by the public for the purpose of specifying a particular brand when desired, and the former employed to designate the article itself as such, irrespective of who is the maker. In describing trees as to natural order, genera and species, so is it in describing medicines: every kind of tincture, fluid extract and pill must have a specific name by which it may be described, and if the introducer does not supply it he has no reasonable cause of complaint if the name claimed by him as a trade-mark ceases to perform its function as a brand-mark and falls into the public domain as a descriptive word or appellative. The trade-mark law should be so revised that its ambiguous wording will not protect those who desire to create perpetual monopolies of secret medicines by claiming that their commonly accepted names are trade-marks.

Your committee has been informed that the preamble and resolutions on the subject of patents and trade-marks, which was presented by the American Pharmaceutical Association to the American Medical Association, and which was referred back to the American Pharmaceutical Association for final action and returned after debate at the last annual meeting of the latter Association, was referred by the American Medical Association to its Section on Materia Medica, Pharmacy and Therapeutics. Said Section appointed a committee consisting of Prof. Warren B. Hill, of Milwaukee, and Dr. Robt. G. Eccles, of New York, for further consideration of the document referred to. Your committee is now informed that these gentlemen will doubtless suggest the formation of a committee on the nomenclature of Materia Medica titles, and your committee, therefore, suggests that the American Pharmaceutical Association should also appoint a committee on nomenclature to co-operate in this important work.

SCIENTIFIC SECTION.

The report of the Special Committee on the Status of the Pharmacists in the Army, Navy and Marine Hospital Service of the United States was given in abstract by the chairman, Geo. F. Payne.

The Scientific Section met for its first session on Thursday morning, at 10 A.M. The first thing being the Chairman's address. This was a scholarly effort on the part of Dr. Ed. Kremers, and devoted to the consideration of the constituents of the many volatile oils. After the reading it was referred to a committee consisting of Messrs. Rusby, Sayre and Stevens. Reports of the various Committees were submitted. The Committee of the Association of the U.S.P., through its Chairman, Mr. Eliel, submitted the following: that Linimentum Saponis be made from the dried soap and not the powder; the per cent. of chlorine in chlorinated lime is too high, and should not be more than 30 per cent.; that no crude carbolic acid of the strength required, is upon the market; a large number of vegetable drugs of the Pharmacopœia are described as being inodorous, when they really do possess odor; an additional identity test should be added to potassium sulphate; the Research Committee examine into the relative value of the various constituents of digitalis; the aloin standard should be made for aloes; to change the name of Resina Podophylli to Podophyllin; Tr. Ferri Chlor. should be kept at least twelve months after making before being used; the establishment of a class of 50 per cent. tinctures and a Research Laboratory. This Report was referred to a Committee consisting of Messrs. Remington, Coblentz and Kraemer. Considerable discussion followed by the various members.

The Reporter on Progress of Pharmacy read the preliminary part of his Report. The first paper read was on

STANDARDS FOR BLACK AND WHITE MUSTARD.

BY J. U. LLOYD.

This is reprinted in this JOURNAL on p. 433. Accompanying this paper was a letter containing the recommendations of C. T. P. Fennel to Prof. Prescott,

under whose auspices the investigation had been undertaken. Then followed the other papers.

AROMATIC WATERS.

By H. V. Arny.

See this JOURNAL, p. 442.

TIME LIMITS OF THE UNITED STATES PHARMACOPŒIA.

By Joseph Feil.

The author called attention to the desirability of the U.S.P. prescribing a time limit that certain preparations may be kept. Tr. Iodi will retain its strength twice as long when kept in the dark as when exposed to the light; diluted hydrocyanic acid deteriorates to one-half strength in six months, and may be readily prepared by the second process given in the U.S.P. Among galenicals that could be profitably marked with time limits, in addition to other precautions are: Syr. of wild cherry, syr. of altheæ, sol. of lead subacetate, camphor water, fennel water, anise water, dilute nitrohydrochloric acid, solution of hydrogen dioxide and certain cerates and ointments.

In the afternoon session the following papers were read:

THE GENERIC NAMES OF PLANTS.

By H. H. Rusby.

The author indicated the relations of the Pharmacopœia to standard authorities, and urged the necessity of perfecting its formulæ and definitions, to keep it in harmony with such authorities. As changes in botanical names refer only to the definitions, and do not affect the titles by which the drugs are known, neither safety nor convenience is disturbed by such changes. We do, however, secure accuracy for our guidance in cases of doubt, calling for an appeal to the definition. If deemed wise to adopt the German (Engler and Prautl) in place of the English (Bentham and Hooker) authority, we should find only eight changes involved.

The two works were then compared as to dates of publication, authorship, bases of classification, the ground covered, the mode of treatment, the nomenclature employed and the judgment displayed. It was concluded that the German work represented a great advance in botanical classification, and its adoption as the U.S.P. standard was recommended.

The paper was accompanied by elaborate tables displaying the comparative order of arrangement, and the composition of all the families treated in the two works.

SCIENTIFIC SYNONOMY OF OUR INDIGENOUS PLANTS.

By A. B. Lyons.

In this paper the author reviews briefly the history of nomenclature, and has collated the synonyms of our indigenous plants.

QUALITATIVE EXAMINATION OF POWDERED DRUGS.

By Henry Kraemer.

This is an additional contribution in the study of powdered drugs from this author, and deals with the determination of any one of something like 300 unknown powders. The paper will be printed later in this JOURNAL.

CATHARTIC ACID IN RHUBARB.

By A. B. Stevens.

The author has separated a large quantity of this acid by a modification of the former method employed by him and George P. Wilder. The evaporation was performed without direct heat by passing a current of air, warmed and dried, over the liquid, which was constantly agitated with a mechanical stirrer. It is proposed, in a subsequent investigation, to compare the acid of rhubarb and that obtained from senna.

THE BITTER PRINCIPLE OF CASCARA SAGRADA.

By A. R. L. Dohme.

The fluid extract of the drug was evaporated until all of the alcohol was removed, resulting in the precipitation of a resin. The clear filtrate was treated with calcined magnesia, and produced a dark brown precipitate. This was treated when dry with alcohol, whereupon it became reddish and dissolved with the exception of a wax-like residue. The alcoholic solution was evaporated and the residue treated with dilute sulphuric acid, whereupon the greater part remained undissolved, and the acid liquid resulting yielded to ether a light brown colored resin. It is believed that the residue left when the magnesium salt is treated with sulphuric acid is the bitter principle, as it has an extremely bitter taste of marked and increasing intensity. This is an acid resin and has been saponified. He has also obtained two other substances, neither of which have, however, as yet been obtained in a pure form. The work will be continued, and the nature of the four substances described ascertained.

ALKALOIDAL CONSTITUENT OF TARAXACUM.

By L. E. Sayre.

The author has continued his investigations and finds a small amount (0·002 per cent.) of an alkaloid in taraxacum root. This principle gave copious precipitate with Mayer's reagent, gold chloride and other alkaloidal reagents.

NOTE ON "GOGO," A PHILIPPINE ISLAND DRUG.

By E. H. Gane.

"Gogo" is the native name given to the fibrous portion of the trunk of *Entada scandens* Benth, N. O. Leguminoseæ. The product is of stem and not root origin. It occurs in long, flattened pieces, ¾ feet in length and ¾ inch wide, of a brick-red color and of very fibrous nature, interspersed with long, tough woody strings. The woody strings consisted of wood vessels of enormous size and length and are very characteristic. The seeds have been found admixed with calabar beans and are reputed to possess emetic properties. The drug possesses an acrid burning taste when chewed, and when swallowed causes considerable nausea. The drug contains 0·56 per cent. saponin, which appears identical with that of quillaja. The curative power of the drug is evidently due to the saponin.

DIFFERENTIATION OF COAL TAR PRODUCTS.

By H. P. Hynson.

The author takes a 2 per cent. alcoholic (95 per cent.) solution of the drug and burns off the alcohol by applying a lighted match directly to it. The nature

of residue remaining is different for the different coal tar products and characteristic for each synthetic product.

INCREASE OF DENSITY IN DISTILLATES OF WINES AND OTHER SPIRITUOUS LIQUORS.

By A. B. Lyons.

The condensation which takes place when alcohol and water are mixed does not seem to be completed immediately. This gradual progressive condensation of mixtures of alcohol and water seems to have been known or suspected by Townes when he constructed his alcohol table, for he allowed his mixtures of alcohol and water to stand two days before taking their specific gravity, but nothing is said about it in the instructions given for determining alcohol in liquors by distillation. The author finds this same slow condensation to go on in mixtures of commercial alcohol with recently boiled distilled water.

PRECIPITATED CALCIUM PHOSPHATE.

By Joseph Feil.

The medicated waters of 1890 are poorer than those of 1880 Pharmacopœia, on account of the solubility of calcium phosphate in water, tending to promote the growth Confervoideæ. In the case of Tr. Opii, this is much more serious. It is well known that the laudanum in drug stores is deficient in strength. Many causes have been assigned for this. Professor Good thought that this was due to the formation of morphine phosphate in the course of preparation. Experiments show this to be true to an unappreciable extent, about $\frac{1}{150}$ of the amount of morphine in the opium remains in the magma in the percolator. The real cause is a physical one. Calcium phosphate instead of aiding the exhaustion, prevents the thorough percolation of the opium. The old process of maceration is recommended in preference to the percolation method.

THE FOOD VALUE OF LIQUID FOODS.

By E. H. Bartley.

This paper describes the methods of determining the value of foods and takes up the prepared foods, prepared from meats, showing that such preparations have either a stimulant action, depending upon the presence of the extractive matters, or a true food value depending upon the contents of albumin or other proteid. The food value of gelatin, carbohydrates, alcohol, etc., and the cost of such foods, to the public, necessary to furnish a definite unit of heat value.

BEZOARS AND BEZOARDICS.

By E. H. Gane.

This paper is historical, and reviews the origin and use of the bezoars, oriental and occidental, as well as the official, in the old London and Edinburgh Pharmacopœias. The high price and scarcity of the genuine bezoars led to the preparation of a series of remedies in imitation of, or supposed to resemble in properties, the official article. There were the mineral, animal and various other bezoardics. These were all prepared by a similar process, by heating butter of antimony and nitric acid, with oxides of the various metals. A large number of quotations from old dispensatories, etc., are given, showing the preparation and uses of these specifics.

The following papers were read by title:

STANDARDIZATION OF VOLUMETRIC ACID AND ALKALI.

By W. A. Puckner.

ASSAY OF SPIRIT OF NITROUS ETHER AND AMYL NITRITE.

By R. Fischer and J. A. Anderson.

DECOMPOSITION OF IODOFORM BY LIGHT.

By E. C. W. Kooke.

DEODORIZED TINCTURE OF OPIUM.

By E. L. Patch.

SPECIFIC GRAVITY OF SOLUTIONS OF CITRIC ACID.

By A. B. Lyons.

STERILIZATION OF INFANT'S FOODS.

By O. W. Krueger.

GLASS FLOWER MODELS.

By H. Benden.

ARACHIS OIL.

By J. W. Thomas.

BÉBÉES AND NOTES ON ESTIMATING EUCALYPTOL.

By Lyman F. Kebler.

Before adjourning at the morning session, J. U. Lloyd made a few remarks relative to the loss of the Association, and particularly of the Scientific Section, in the death of Prof. Henry Trimble. The speaker and others followed, paying their tributes to his memory. It was moved that the Secretary of the Section at this time convey the sympathies and condolence of the Scientific Section of the American Pharmaceutical Association to the widow and children of Prof. Trimble in this their hour of bereavement.

Upon adjourning at the afternoon session, the newly-elected officers were installed. Henry H. Rusby, Chairman, and H. V. Arny, Secretary. Prof. Prescott was reappointed Chairman of the Research Committee.

In the evening, Prof. Wm. Simon delivered a lecture on "Liquid Air," which was illustrated with experiments and diagram illustrating its manufacture. The changes induced in some common substances when put into the liquid air, were striking, as paraffin, ice, rubber band, piece of beef becoming brittle; albumin of egg crystallizing; a mercury hammer was employed to drive tacks in a board; alcohol changed to a mass of white crystals; change in color of red mercuric iodide and potassium bichromate crystals; copper, however, remains malleable, and copper sulphate does not change in color. The lecturer employed various other interesting experiments, illustrating the properties of liquid air, and closed with some remarks on the future of this substance.

SECTION ON EDUCATION AND LEGISLATION.

On Friday morning the Section on Education and Legislation held its first meeting. The first thing in order was the reading of the Chairman's (J. O.

Beal's) address, which was devoted to the consideration of the status of pharmacy laws and prospective reforms in pharmacy by means of proposed legislative action. Stress was laid upon the necessity of a college education as a prerequisite for registration, and the fact that there are more important factors for improving the present evils in pharmacy than in the passage of laws. He further did not believe in making two classes of pharmacists, but that the registered pharmacist and qualified assistant alone should be recognized and that some time should elapse before the latter can become a registered pharmacist. The address was accepted and referred to a committee for action. In the discussion which followed, it was apparent that the mercantile side of pharmacy was drifting into the hands of department stores, and that the best part of pharmacy—requiring the educated pharmacist—remains with him.

The Secretary's (H. B. Webster's) report showed the progress of legislation in the different States. The following papers were presented in this and the remaining two sessions of the Section:

THE METRIC SYSTEM IN MEDICAL COLLEGES.

By H. M. Whelpley.

The author sent letters containing certain queries for answers to 154 medical colleges, asking among other things the extent to which the metric system was taught in the medical colleges. The answers of fifty-one out of sixty-seven indicated that they were employing the metric system wherever practicable. In the discussion which followed, F. G. Ryan called attention to some statistics which he had received from the Erie Pharmaceutical Association on the employment of the metric system by physicians.

COLLEGES OF PHARMACY AND THE NEW PHARMACOLOGY.

By R. G. Eccles.

The author, in a previous paper read at this meeting, on "The New Pharmacology," defined pharmacology as the science, not art of pharmacy. The laws underlying pharmaceutical operations he said are an extension of the laws of chemistry.

NOMENCLATURE OF THE MODERN SYNTHETICS.

By Virgil Coblentz.

The object of this paper was to find a method of naming the various synthetic compounds of modern medicine from their chemical composition. The paper dealt with the known and suggested origin of the various organo-bismuth combinations and derivatives of phenetidin, pyrazolon, quinolin and phenol. Coblentz claims that it is not practicable at the present time to give a system for naming the modern synthetics and that the present method is as good as we have.

PHARMACOLOGY AND PHARMACY.

By A. R. L. Dohme.

Pharmacology was defined from the medical point of view, and the author claimed that as it pertains to drugs it is properly a part of the study of them. It broadens and completes the knowledge of drugs and brings the pharmacist

and physician in closer touch with each other, and the author claimed it to be a valuable factor in the teaching and practice of pharmacy.

SHORTER HOURS FOR PHARMACISTS.

By W. C. Alpers.

The author recommended that the agitation for shorter hours among pharmacists continue, and that the restriction to sixty-six hours of employment during the week for drug clerks be allowed, the proprietor to divide the time as he may see fit.

STATE BOARD EXAMINATIONS.

By Harry B. Mason.

In this paper the author discusses as to whether a man is a competent pharmacist who passes the State Board examination, after failing three times, and comes to the conclusion, with Dr. Kremers, that no applicant should be allowed more than, say, three examinations.

SIMPLIFIED ORTHOGRAPHY.

By Seward W. Williams.

In the matter of orthography and nomenclature the author is of the opinion, that unless conditions of safety against mistakes forbid, it is certainly better that the Pharmacopœia should be active rather than passive in the matter of orthography and nomenclature. He states, however, that it is more of a matter of convenience than that of safety that presents greater difficulties in the matter of orthography and nomenclature.

PHYSICS, THE FOUNDATION OF PHARMACEUTICAL PEDAGOGICS.

By Joseph Feil.

The author gives an outline of physical experiments which can be readily undertaken in any laboratory and which tend to develop those perceptive powers required to understand the processes of every-day pharmacy.

THE SCHOOL OF PRACTICAL EXPERIENCE.

By E. L. Patch.

Unless experience be guided by correct theory, she is as apt to teach lessons that were better never learned as to teach those of practical value. The author indicates that correct theory should precede correct practice and indicates some experiences which are, and some which are not, practical.

POISON: ITS LEGAL DEFINITION AND SALE.

By F. H. Freericks.

Since it has been impracticable to place upon the word "poison" a construction sufficiently broad to be used without hardship and sufficiently limited to be safe, the author expresses the opinion that the Revision Committee of the U.S.P. is the proper authority for framing a proper definition, and that it is also desirable that the Pharmacopœia state what drugs shall be considered as

of dangerous character based upon the maximum doses in which they may be administered. The author appends a rough classification of a list such as the Pharmacopœia might adopt.

PHARMACEUTICAL TEACHING.

By T. D. Reed.

The author has formulated certain principles to be employed in pharmaceutical teaching.

THE LEADERSHIP OF THE PHARMACOPŒIA.

By W. L. Scoville.

The paper deals with the practical side of the Pharmacopœia, and in it he finds something more than a scientific and standard work, but one which meets many business demands.

ORGANIC CHEMISTRY FOR PHARMACISTS.

By F. J. Wulling.

The author outlines a course of laboratory work in organic chemistry for pharmacists.

THE UNITED STATES PHARMACOPŒIA AND THE MEDICAL PROFESSION.

By F. E. Stewart.

To make the Pharmacopœia more largely acceptable to the medical profession, it should follow the profession and not attempt to lead it. The author is also of the opinion that an obstacle which has stood in the way of making the United States Pharmacopœia more largely acceptable to the medical profession has been the misunderstanding with regard to our patent and trade-mark laws as related to medical science and its associated arts.

FINAL EXAMINATIONS.

By L. E. Sayre.

The author contends that final examinations have advantages similar to those of the ordinary recitation, quiz and periodical review.

CARE AND CONTROL OF PRESCRIPTIONS.

By J. M. Good.

The Missouri pharmacy law makes the pharmacist the proper custodian of the prescription, and, as a logical deduction, decides the ownership.

The following papers were also presented :

ACCESSORY PHARMACEUTICAL EDUCATION.

By E. H. Partley.

SECRETIONARY ANALYSIS AND BACTERIOLOGICAL EXAMINATIONS BY PHARMACISTS.

By A. R. L. Dohme.

PRACTICAL PHARMACEUTICAL LEGISLATION.

By H. S. WEBSTER.

PHARMACEUTICAL EDUCATION, EXAMINATION AND THE PRESENT AND FUTURE STATUS OF PHARMACY.

By ALFRED B. HUSTED.

The report of the Committee on a Model Pharmacy Law was read by Professor Remington for the Chairman. In it is contained a review of the history of pharmacy laws, with a summary of the results of each year's work. The report consists chiefly of the results of letters sent to various associations, etc., no less than three hundred sources of information having been utilized. The report closes with certain recommendations relative to what ought be considered in a model pharmacy law.

At the third session of the Section on Education and Legislation, the officers of the Section were elected and installed, viz.: Chairman, H. B. Lyons; Secretary, C. B. Lowe.

COMMERCIAL SECTION.

The Commercial Section met on Tuesday evening at 8 o'clock. The Chairman (Joseph Jacobs) opened the meeting with an address and had prepared several interesting papers. In the one on

CHANGES IN THE DRUG BUSINESS,

Mr. Jacobs indicated the changes to be in the method of conducting the drug business are principally the decline of the prescription department, the introduction of the tablet triturate, the manufacture of physicians' private recipes by the large manufacturing establishments, the preference of many physicians for the ready-made compounds, and the absorption by the department stores of the line of goods generally known as toilet, fancy and sundries.

Mr. Feil read a paper which indicated that drug stores in the United States are in numbers on the decrease. He stated that in 1897 there were 1,201 less drug stores than in the preceding year, or a loss of 3·2 per cent.; that in 1898 there are 996 less than last year, a loss of 2·7 per cent., and that in 1898 there are 2,197 less stores than two years ago, a loss of 5·9 per cent. Wholesale druggists numbered, in 1896, 296; in 1897, 290, and in 1898, 284. Thus, it will be observed, there is also a falling-off in the number of wholesale druggists.

L. E. Sayre read a paper on "The Drug Business Before the Advent of the Price Cutter."

Resolutions were reported by C. A. Mayo, in which protest was made against the unjust discrimination against the drug trade by confining the war revenue tax to medicines and perfumery and the recommendation made that the Section memorialize Congress, requesting that the war revenue tax be applied also to all articles of a proprietary nature put up in packages for popular use, whether the article be in the nature of a food, a beverage, a cosmetic, a medicine or for use in the arts. The resolutions also condemned those manufacturers who have taken advantage of the imposition of the tax to raise the price of their preparations greatly in advance of the amount of the tax imposed on them,

and commended those manufacturers who have refrained from adopting such a course.

The movement started recently among retail druggists in the West to form an association which shall have for its object the furtherance of the commercial interests of its members came up before the Commercial Section in the shape of a proposition that delegates be sent by the Association to the proposed convention to form the new association, which will be held at St. Louis, on October 17th. The matter was referred to a committee, which reported, through Prof. Joseph P. Remington, of Philadelphia, the following resolution: "While it is not in the power of the Association to officially aid the organization of the proposed retail druggists' association, whose call for a convention is based on the advance in prices of proprietary and patented preparations, this Association heartily desires the success of every organized effort of retail druggists which will protect their commercial and pecuniary interests."

THE FINAL GENERAL SESSION

of the Association was held on Saturday afternoon. Various items of business were transacted, and the officers for the ensuing year installed. The meeting then adjourned, the members fully appreciating that it has been one of unusual success. The amount of work accomplished—in business transacted, papers read, etc.—has been equal to, if not greater than at any previous meeting, notwithstanding the hot weather. The Sections on Science, and Education and Legislation are to be congratulated on the merits of the papers presented, and the excellence of the discussions. The Commercial Section has been resurrected, and it is apparent may be a useful department to the Association. The sociable features were admirably carried out. It is doubtful if the members of the Association have ever enjoyed such generous hospitality and unbounded interest in their welfare, as was shown by the Committee of Arrangements. After the Session some of the members went for short excursions to various points, while the majority returned to their homes with the pleasant memories of a most enjoyable and profitable Convention.

OBITUARY.

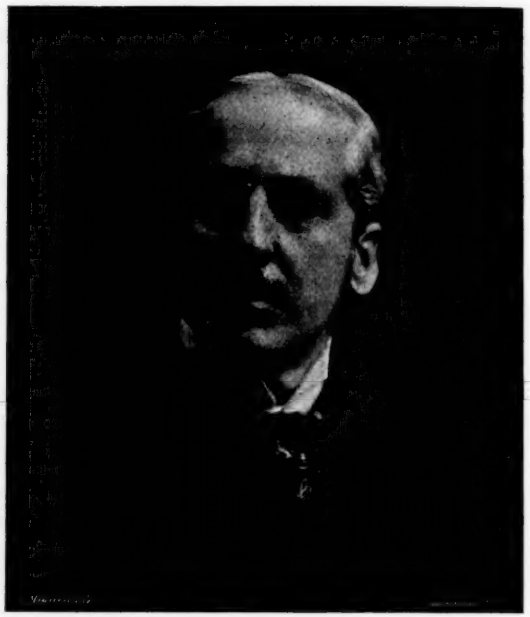
William Pepper, M.D., LL.D., who was distinguished as one of the most eminent physicians of this country, and also as a man of enlightened public spirit, died of angina pectoris, at Pleasanton, Cal., on July 28th, where he had gone for rest and recreation.

Dr. Pepper was in the fifty-fifth year of his age, having been born in Philadelphia, on August 21, 1843. He was the son of Dr. William Pepper, a distinguished physician of his day. He was educated at the University of Pennsylvania having graduated from its Collegiate Department in 1862, and from its Medical Department in 1864. Soon becoming identified with the work of the University he was lecturer on Morbid Anatomy, from 1868 to 1870 and on Clinical Medicine from 1870 to 1876, and professor of the latter subject from 1876 to 1881, when he was elected to succeed Dr. Alfred Stillé in the Chair of the Theory and Practice of Medicine, which position he held until the time of

his death. In the same year he became Provost of the University and held this position until 1894. Under his administration the University made rapid material progress, and in addition eight new departments were created.

Dr. Pepper was also noted as a voluminous writer, his most important work being a "System of Medicine by American Authors," published in 1885-1886.

We have not the space to enumerate the various public works with which he was affiliated, but quote the following from the *Philadelphia Medical Journal*, in its issue of August 6th, as summarizing in some measure his varied interests:



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"In the death of Dr. Pepper, the city of Philadelphia has lost a most public-spirited citizen, the medical profession a most distinguished representative, the cause of education and of art a most liberal patron and advocate, and the University of Pennsylvania a loyal, sincere and self-sacrificing friend."

Phosphorescence of Decaying Wood is not chemical, as supposed, but of vegetable origin. The mycelium of a fungus from pine has been cultivated in a decoction of beech bark and agar-agar, the result being a white, brilliantly-luminous growth.—*Amer. Month. Micros. Jour.*

The Use of Rœntgen Rays, in detecting the adulteration of gum opium with lead balls was employed by A. Tschirch. In the one he found a large lead ball, whereas in the other there were smaller lead balls.—*Schweiz. Woch. f. Chem. u. Pharm.*, 1898, p. 219.